VOLUME XXXIV NUMBER FIVE

THE NATIONAL GEOGRAPHIC MAGAZINE

NOVEMBER, 1918

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The Spirit of the Geographic
With 4 Illustrations

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
HUBBARD MEMORIAL HALL
WASHINGTON, D.C.

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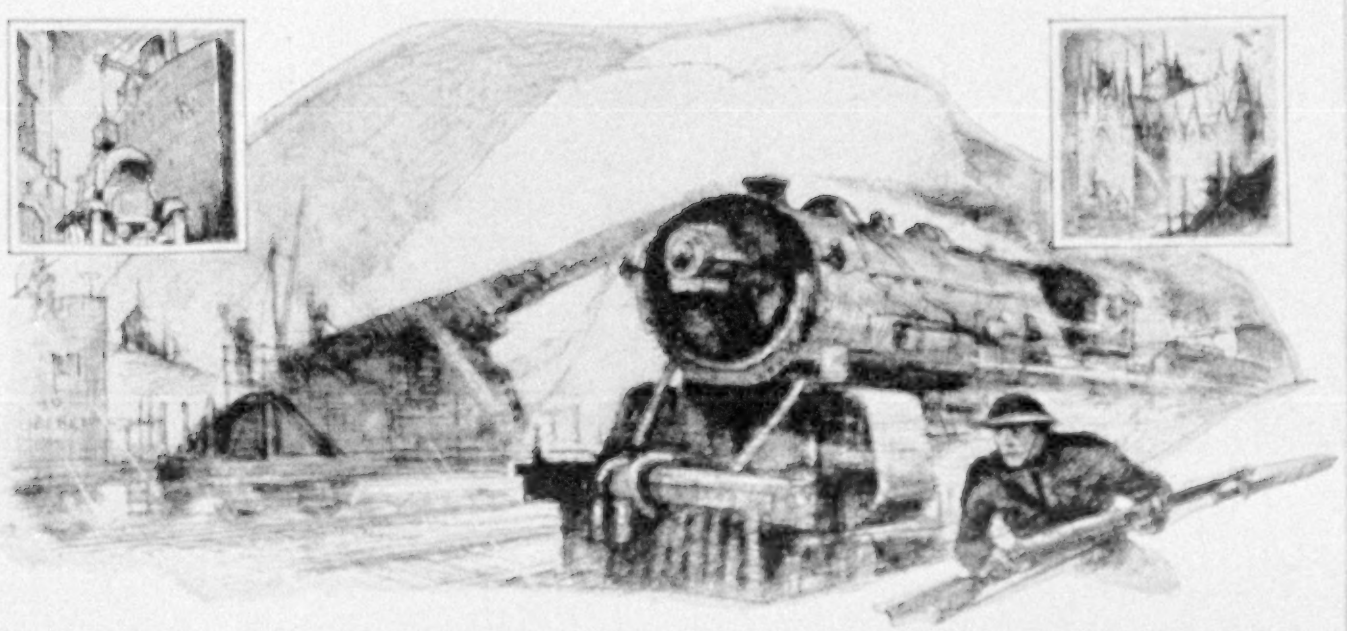

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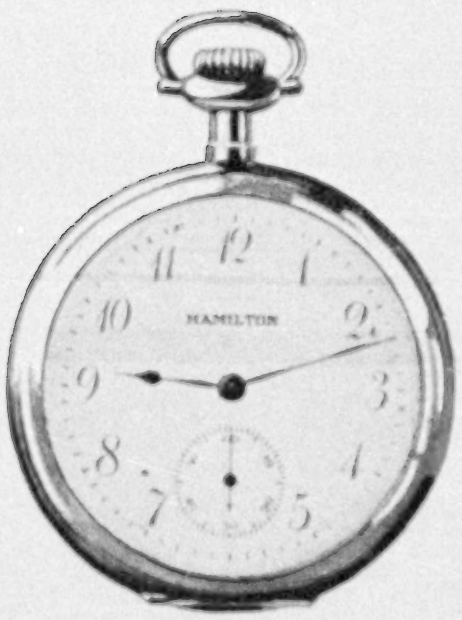

Crowded trains bearing the enormous quantities of munitions and supplies poured ceaselessly forward—the wreckage of war flowed back from the lines—over this road. No. 992 Hamilton Models were purchased by the Government for its train crews.

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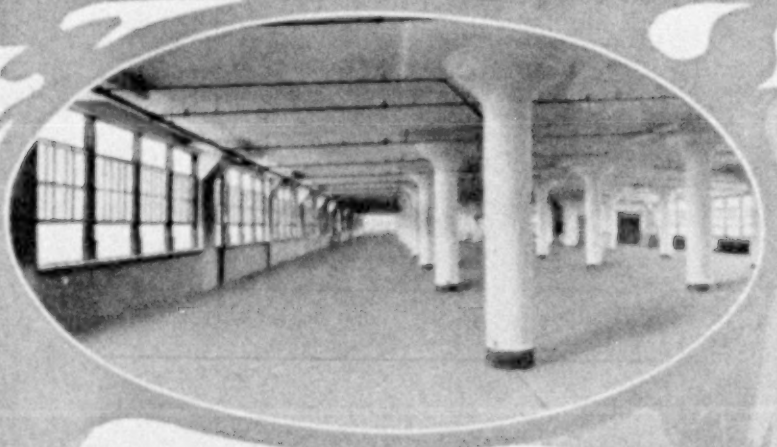
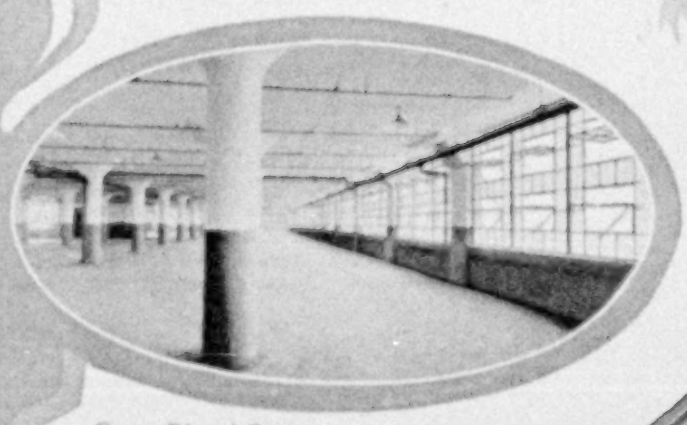


Fenestra Vertically Sliding Sash meets requirements in offices.



Center Pivoted Fenestra meets factory requirements.

There is a type of Fenestra Solid Steel Window for every requirement. In the Fleisher Textile Plant which covers an entire city block and is the largest factory of its kind in the world, Wm. Steele & Sons Company, Engineers and Constructors, employed four distinct types of Fenestra.

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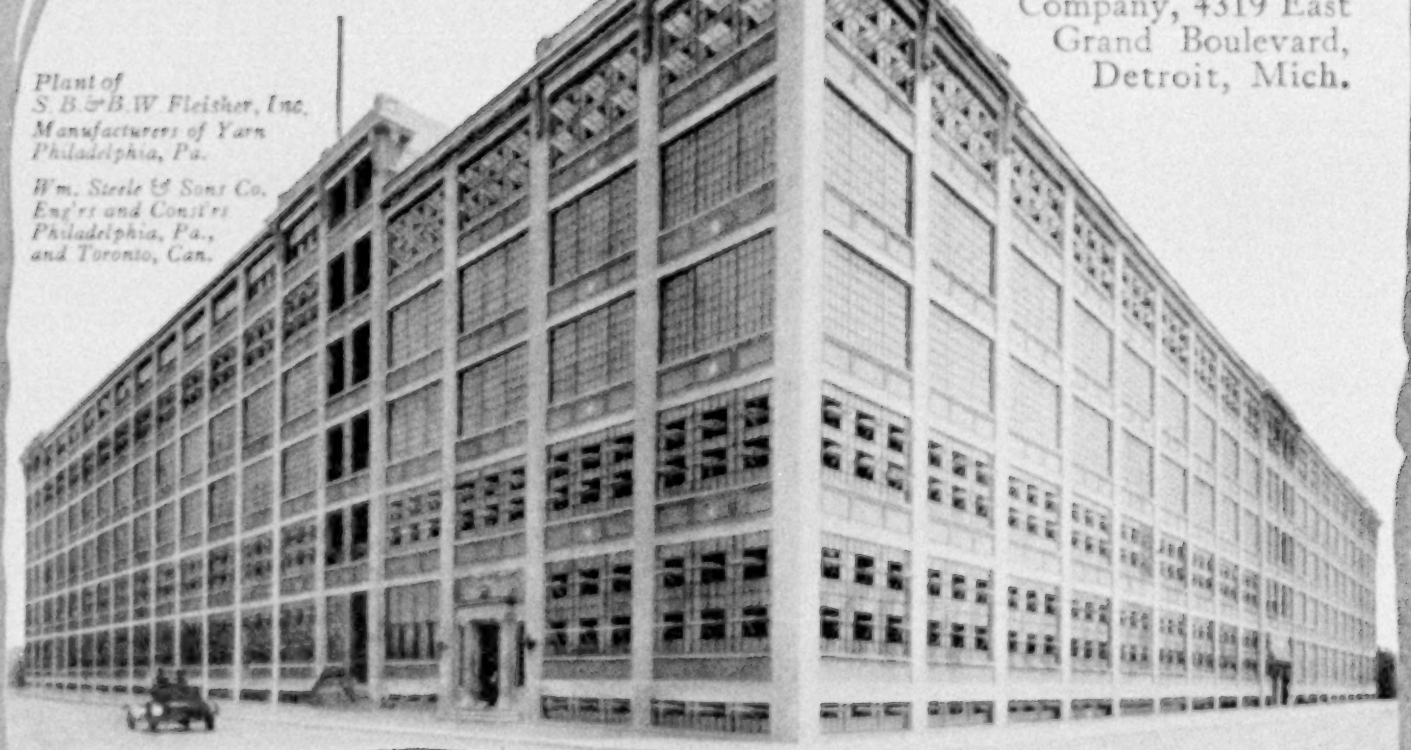

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It offers more power with no greater weight, more speed with less gasoline, more flexibility with less gear shifting. It is cooler, quieter and quicker than any previous Pierce-Arrow.

The new engine is no sudden innovation. It is the result of years of careful experiment. It is in line with the steady development of the Pierce-Arrow. It is in harmony with the policy that no changes should be made until a real improvement had been perfected.

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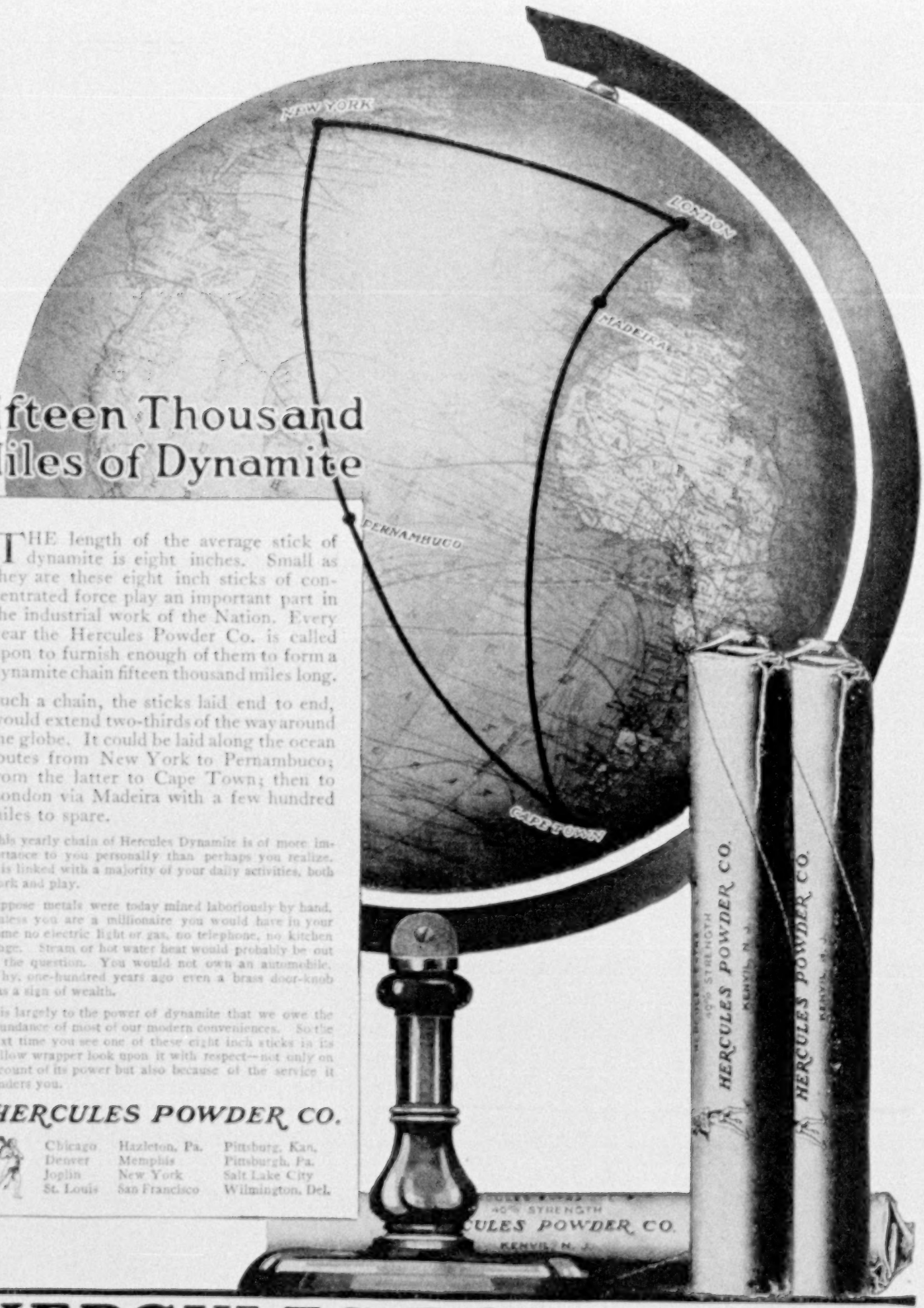

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THE length of the average stick of dynamite is eight inches. Small as they are these eight inch sticks of concentrated force play an important part in the industrial work of the Nation. Every year the Hercules Powder Co. is called upon to furnish enough of them to form a dynamite chain fifteen thousand miles long.

Such a chain, the sticks laid end to end, would extend two-thirds of the way around the globe. It could be laid along the ocean routes from New York to Pernambuco; from the latter to Cape Town; then to London via Madeira with a few hundred miles to spare.

This yearly chain of Hercules Dynamite is of more importance to you personally than perhaps you realize. It is linked with a majority of your daily activities, both work and play.

Suppose metals were today mined laboriously by hand. Unless you are a millionaire you would have in your home no electric light or gas, no telephone, no kitchen range. Steam or hot water heat would probably be out of the question. You would not own an automobile. Why, one-hundred years ago even a brass door-knob was a sign of wealth.

It is largely to the power of dynamite that we owe the abundance of most of our modern conveniences. So the next time you see one of these eight inch sticks in its yellow wrapper look upon it with respect—not only on account of its power but also because of the service it renders you.

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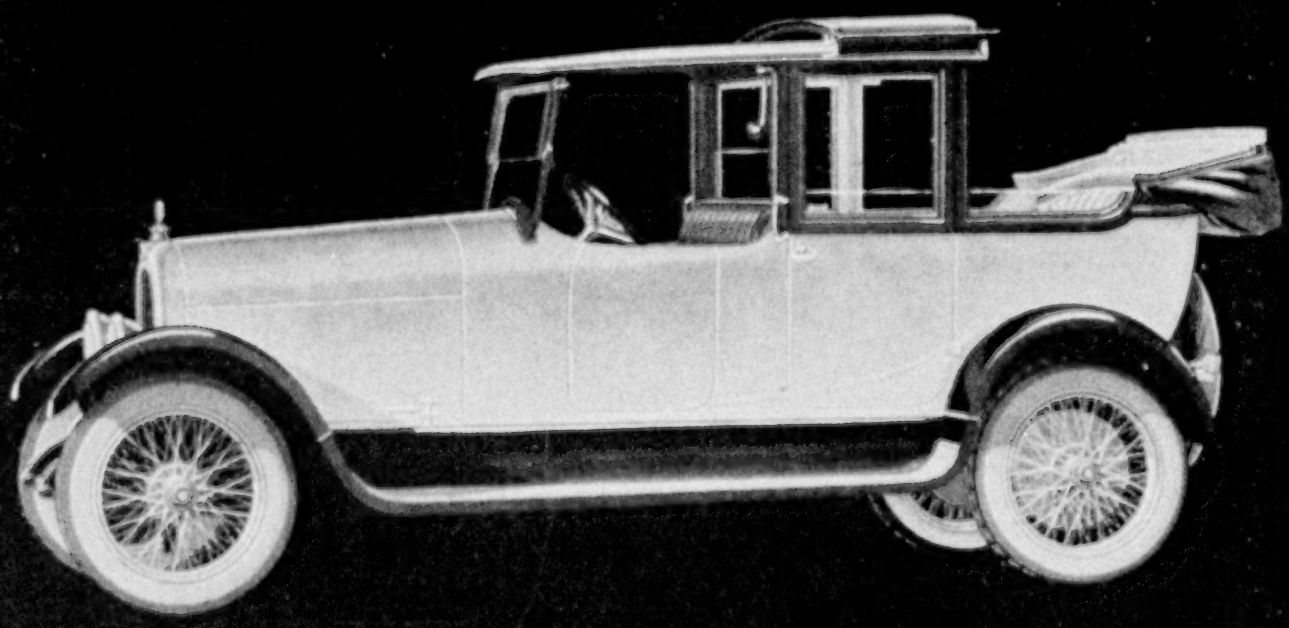

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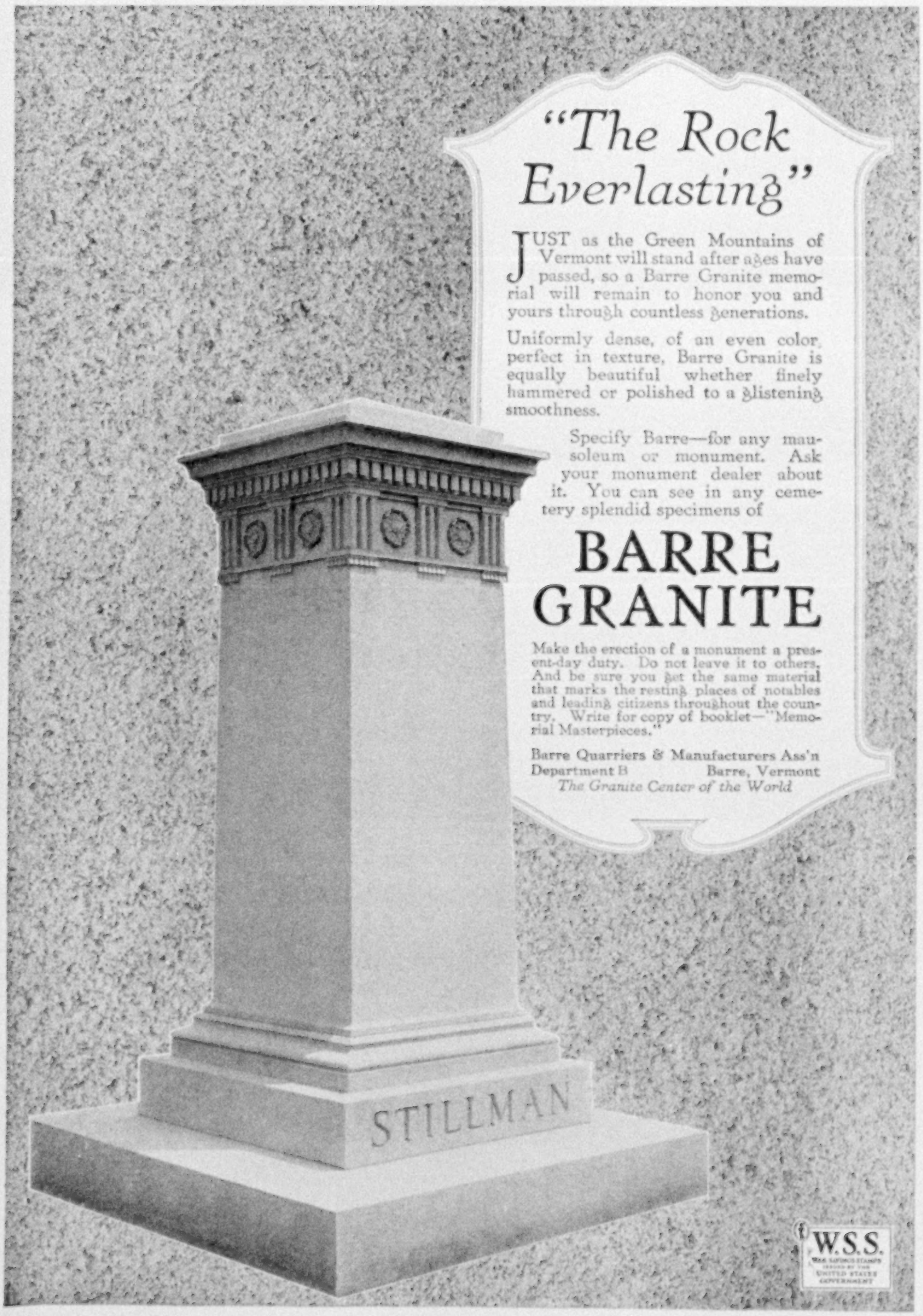

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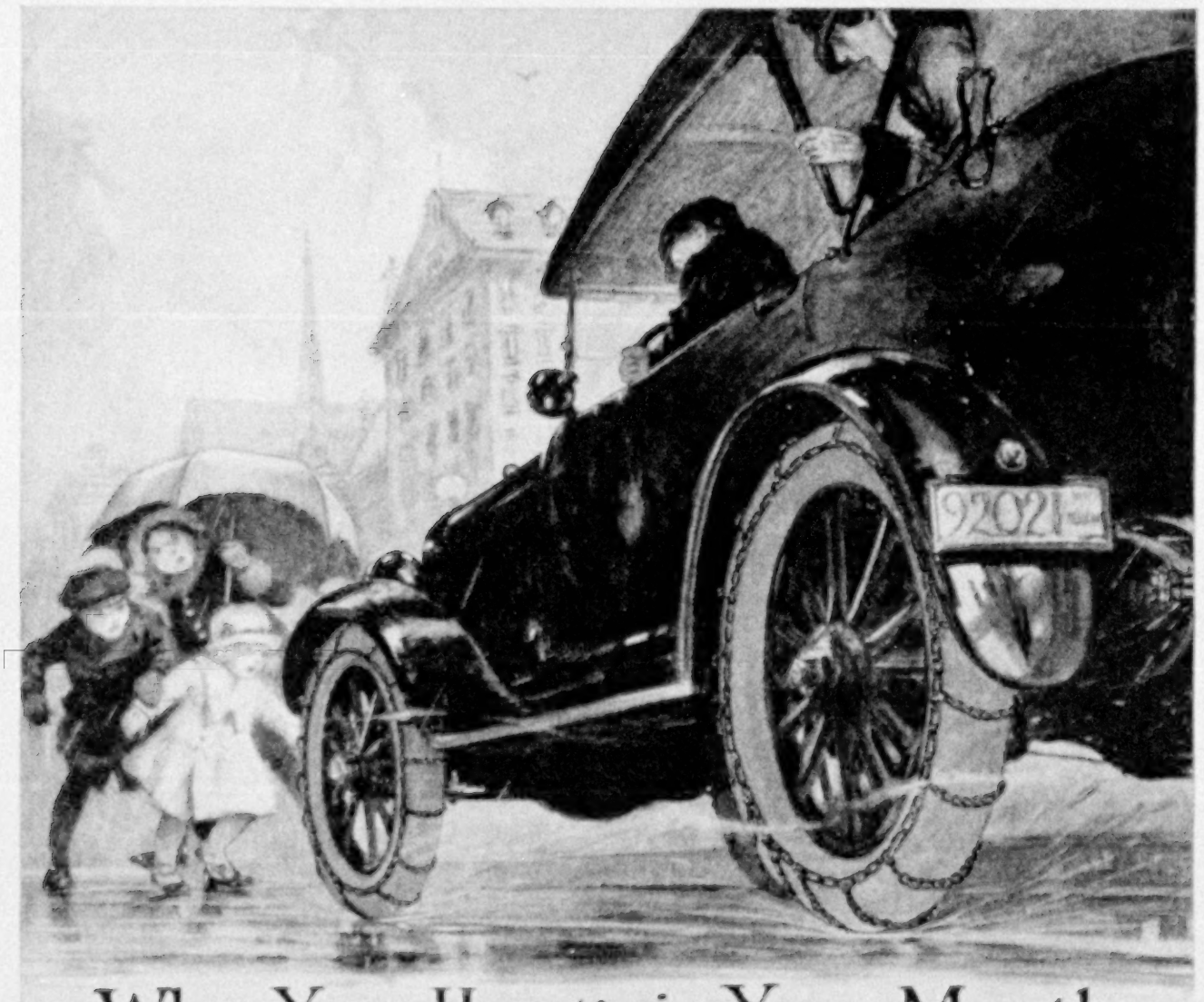

When Your Heart's in Your Mouth-

Then is when Tire Chains prove their Real value—they add so much to your brake power. Without them brakes would be useless.

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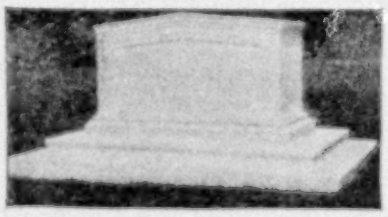

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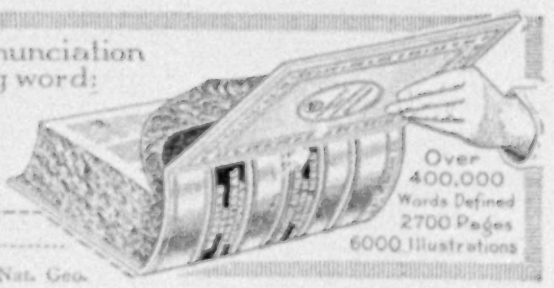

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VOL. XXXIV, No. 5 WASHINGTON NOVEMBER, 1918

THE NATIONAL GEOGRAPHIC MAGAZINE

OUR FRIENDS, THE FRENCH

An Appraisal of the Traits and Temperament of the Citizens of Our Sister Republic

By Carl Holliday

Dean of the University of Toledo, Ohio

WHAT manner of men are these French with whom our soldiers have been fighting side by side? To many an American a Frenchman has long meant simply an elegantly dressed gentleman with a waxed mustache, a multitude of gestures, a shoulder that automatically shrugs, and a heart that is very susceptible to feminine charms; but during the last four years the average American has been revising his opinions of this citizen of the most civilized country on the globe and is now asking in amazement, "Can this dainty gentleman that I considered super-refined, romantic, sentimental, and effete be the hero who has held at bay the most ruthless nation in the history of man?"

Even so. This same gentleman, so different in his entire composition from those rugged, home-spun characters that we have produced—and admired—in America, is now the marvel of the world.

The French have proved to us, what we have long been unwilling to admit, that a man may be artistic and at the same time brave; that he may love finery and at the proper time fire a shot from a mudhole in the trenches that is heard around the world; that he may spend hours talking about art and belles-lettres and, when the call comes, march into a man-made hell and calmly lay down his life for his country. In short, we Americans have learned from the French that a man may possess all the refining effects of culture and at the same moment be a hero.

It is a wholesome lesson for us to learn that boastful swaggering and impolite aggressiveness and lack of consideration for the subtle, dainty refinements of civilized society are not necessarily related to strength, endurance, and heroism.

THE UNIQUE FRENCH TEMPERAMENT

The French temperament is unique; it is social champagne. A people full of tender feeling, they are not in the least averse to a public demonstration of emotion.

While the English and the American hide such sentiment with a certain appearance of stoicism, this unabashed people expresses itself frankly and publicly with kisses, embraces, tears, and an amazing flood of vivid words.

A school-boy when leaving his mother at the door as he departs for school receives more attention, hugs, warnings, and tokens of affection than would a Seattle boy starting for New York.

A family gathering or separating at a French railway station is an occasion as full of tears and cheek-kissing and pro-

Photograph by H. C. Ellis

A MASTERPIECE OF CULINARY ART: PHOTOGRAPHED IN THE KITCHEN OF A FAMOUS PARIS RESTAURANT

The Paris chef takes as great pride in such a piece de resistance as does the sculptor in his less perishable creation. The scientific cook has stood the French people in good stead during the past four and a half years, for he has brought all his skill into play in making palatable the most meager of rations.

longed embraces as that of an American bride leaving her fond mama, while the collision of two automobiles is an opportunity for oratory surpassing anything heard in America. And yet these are the people who said at Verdun, "They shall not pass!"

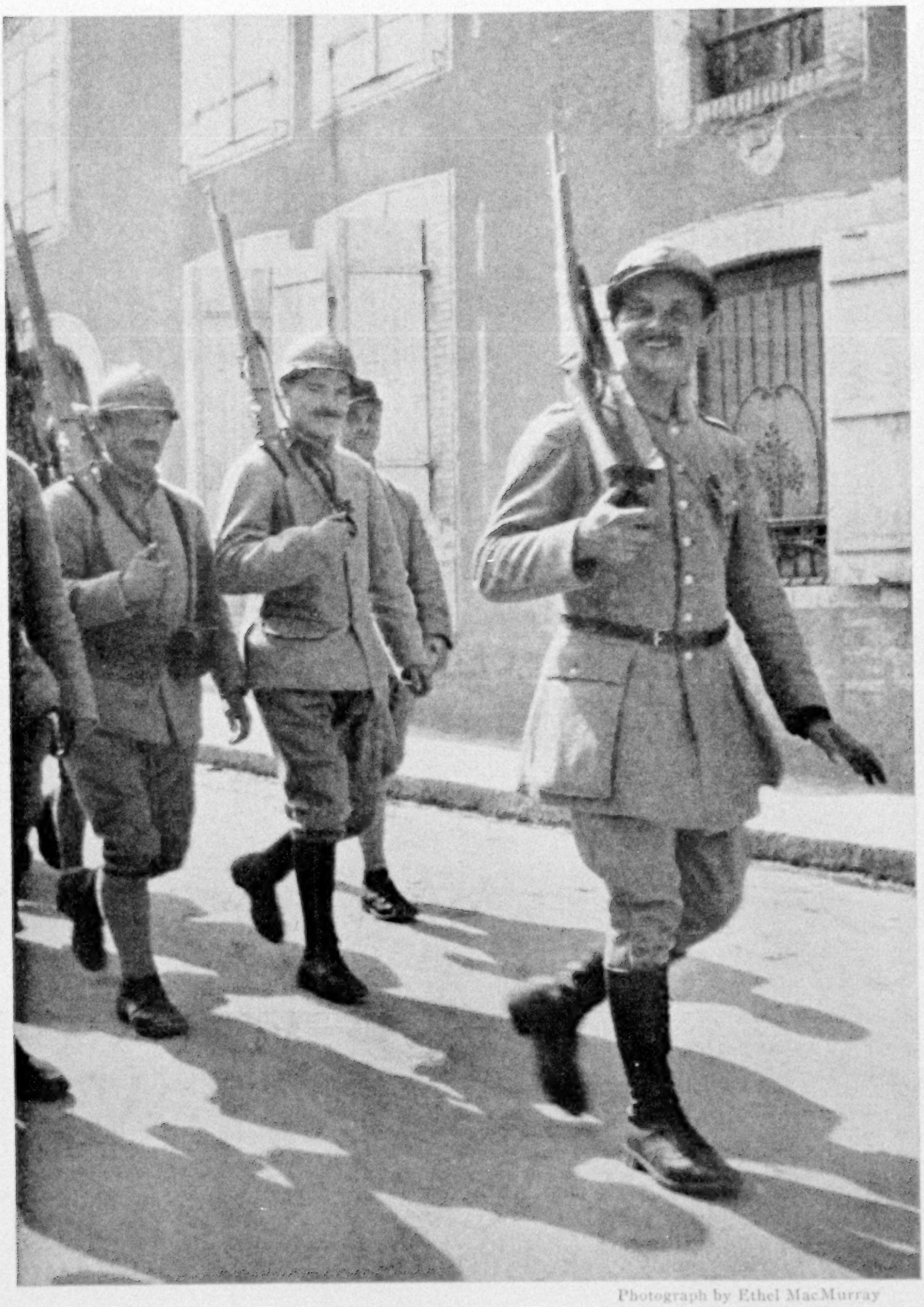
But an American must not take this French volatility too seriously. It is doubtful whether in the history of man the world has possessed a more good-natured, more patient people.

Contrary to foreign opinion, these French have almost infinite patience. In fact, their very patience with lax public administration and wrong legislation has sometimes been their undoing, and only on rare occasions and at long intervals, as in the French Revolution, will they be provoked into violent bursting of unjust restraints. But when they do, one is liable to recall the ancient warning, "Beware of the fury of a patient man."

Owing to their extreme intellectual alertness, they seem to us more silent folk forever arguing or scolding; but it is only that same energy transmuted into language rather than into the wasted physical action so often seen in America. That they are a people of exceptionally good disposition is proved by the fact that so few genuine physical clashes result from the veritable fusilade of argument that they constantly fire at one another.

"NO PEOPLE ENJOY THEMSELVES MORE THOROUGHLY"

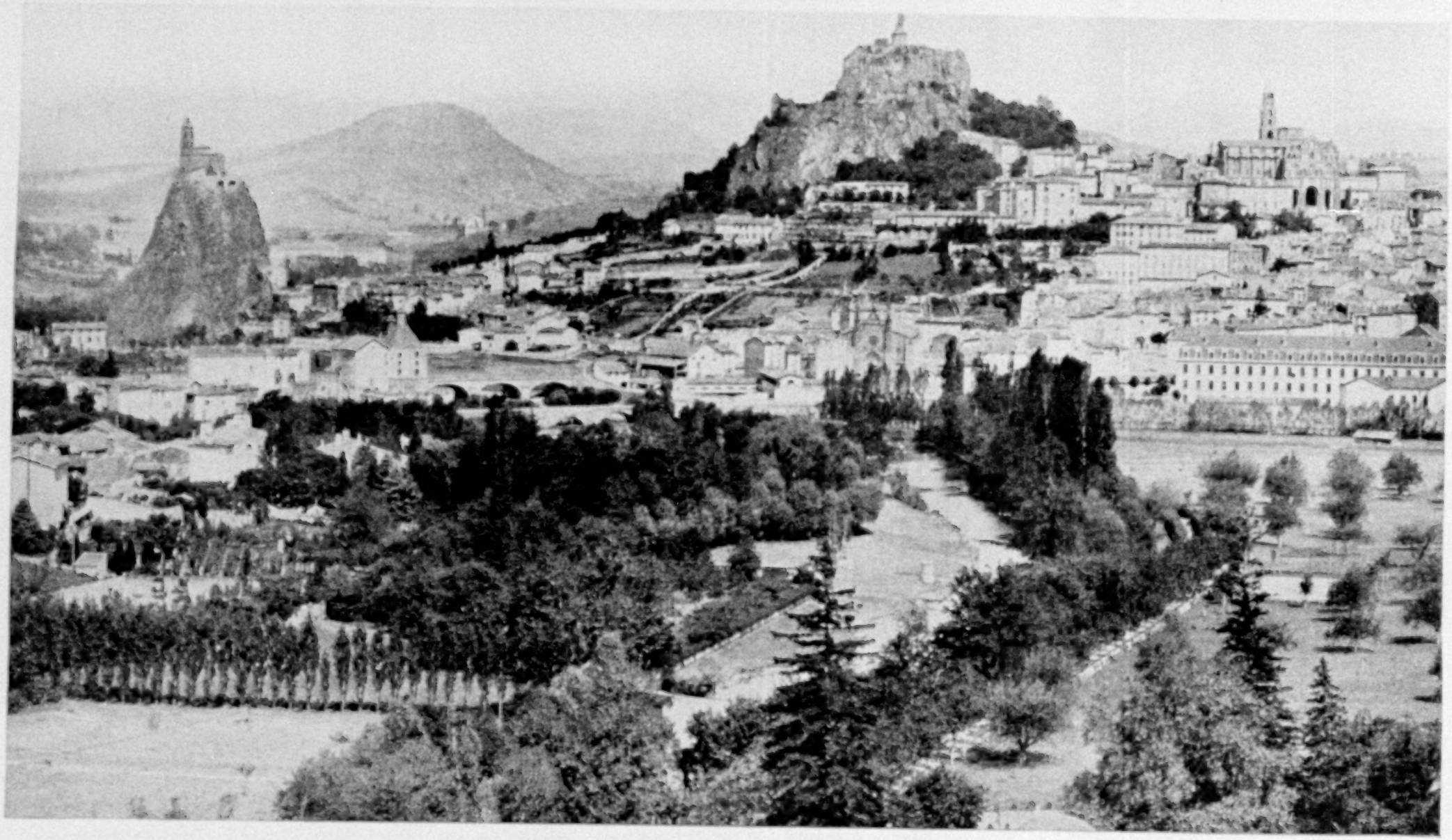
Long ago Goldsmith pointed out that the French were the only people who could be happy while starving, and a modern writer, Barker, in his *France of the French*, has declared: "No people en-



Photograph by Ethel MacMurray

THE SPIRIT OF FRANCE

These men typify in their cheerfulness and readiness one of the national characteristics which made them invincible in the face of almost overwhelming odds of men and artillery in the first onrush of the Huns.



GENERAL VIEW OF LE PUY, DEPARTMENT OF HAUTE-LOIRE, SHOWING THE CATHEDRAL ON THE RIGHT, THE ROCK OF THE VIRGIN IN THE CENTER, AND NOTRE DAME D'AIGUILHE ON THE LEFT

The cathedral is an eleventh-twelfth century edifice of rare architectural interest. Mount Anis, the eminence in the center of the picture, is a volcanic rock rising to a height of 435 feet. It is crowned by a lofty statue of Notre Dame de France, cast from 200 cannons captured by the French at Sebastopol. The Church of St. Michel d'Aiguilhe, which surmounts the smaller pinnacle to the left, is a curious structure dating from the tenth century. Before the war 90,000 women were employed in lacemaking in the district of which Le Puy is the capital.

OVER THE COFFEE CUPS IN NORTHERN FRANCE

"It was the French woman's faith in small savings that rescued her country after the war of 1870, when vast horded wealth was willingly brought forth to pay the enormous national debt, and the same faith made it possible for France to preserve herself and the world during the world war."

joy themselves more thoroughly while they are about it."

Frugal, almost parsimonious, in their spending of a sou, how do they obtain all this pleasure? Our American conception of a good time, I fear, too often consists in spending a huge amount of money, in rushing madly hither and thither from this theater to that, from roof garden to summer resort, from ball to masquerade.

Your Frenchman, however, has a totally different conception of a good time. To him the society of his fellow-men is a source of exquisite and eternal pleasure.

Belonging to a people of infinite social capacity, a people in whom the social instinct is inherent and ancient, he has made fellowship an art of which he alone is the master. "Since there has been a France at all," says Brownell in his *French Traits*, "France has embodied the social instinct."

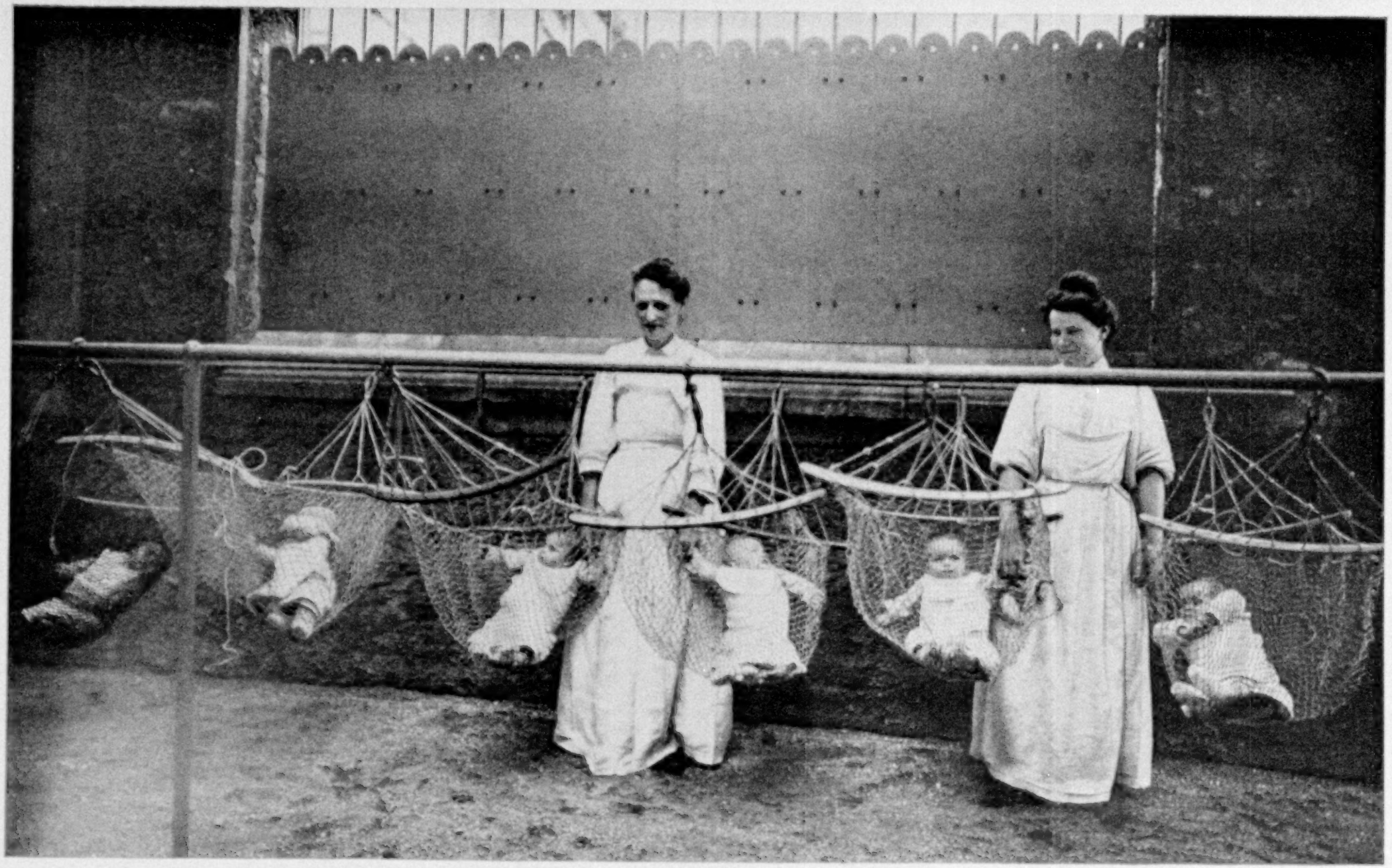
To neglect the art of making friends, of making oneself agreeable to those one meets, of making oneself nothing short of charming as a conversationalist, is to a Frenchman nothing short of domestic, commercial, and political suicide.

In short, the French have long since learned, what we Americans are simply beginning to learn, that social accomplishments should be purposely and purposefully exercised, and are a valuable part of life's equipment for the truly successful man.

LENDING GRACE TO THE HARDSHIPS OF LIFE

How adaptable is this social quality of the French! How it makes pleasant the rough road of life! It lends a personal grace not only to the necessities, but even to the very hardships, of life.

During this war I have taken dinner in French families where the bread was distressingly scarce and pitiably poor, the sugar limited to one cube per individual, butter entirely absent, and the quantity



Photograph by H. C. Ellis

THE PUBLIC NURSERY, WHERE BABY IS CARED FOR WHILE MOTHER WORKS IN A GOVERNMENT FACTORY

In France, as in every other country, the war is necessitating a great readjustment of economic life to accommodate conditions to the advent of woman in the industrial activities of the nation. Following her four and a half years of labor during the war, the French woman, no less than her British sister, has proved her right to economic independence.

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Photograph by H. C. Ellis

BOOK STALLS ALONG THE SEINE: THE BOOKWORM'S PARADISE

"In the Frenchman we find an unusual love of philosophy and a certain worship of reason which are rather discouraging to us more loosely thinking, more sentimental, Americans. The Frenchman, even of the lower middle classes, is always searching for a reason, an explanation, a more thorough understanding of this and that."

of meat so small that only the national optimism could magnify it into a square meal, and yet the bon mot flourished upon this very poverty of food. It simply means that the Frenchman has learned to enjoy life independent of all circumstances, and whether in city or in trench he is still the man of society.

Near the battle fronts the American soldiers at meal time snatch up their mess kits, rush to the camp kitchen, hastily swallow their food with scarcely a word, and go about their business; but the French seat themselves with some ceremony, take an hour or more to eat their small ration, and meanwhile discuss with precision, energy, and lively wit a multitude of subjects.

WHERE THE FRENCH BECOME RETICENT

And yet, contrary to the common American opinion, the Frenchman is not at all effusive about his *personal* affairs. On philosophy, art, and literature he will debate with you with titanic energy, but attempt to divert the conversation into matters domestic or personal and you will find the talk suddenly languishing.

In other words, your Frenchman is not a believer in a "shameless exposure of spiritual nudity." His personal, domestic, and spiritual life are not for public or incidental discussion, and, though you may know him for years and spend a multitude of hours with him in the most stimulating conversations of your life, still you feel that you do not and probably cannot ever know his inner life.

He can have the most unselfish enthusiasm for your success; without a trace of jealousy he will wildly applaud the successful feats of his colleague in university, laboratory, or court; but never does he open his heart to you or that col-

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Photograph by H. C. Ellis

THE ORNATE INTERIOR OF A GREAT PARIS DEPARTMENT STORE: IN COMMERCE, AS IN EVERY OTHER ACTIVITY OF LIFE, THE FRENCHMAN'S LOVE OF BEAUTY IS MANIFEST

The floral decorations seen here agree with the poetical name of this particular store, "Au Printemps" (In the Springtime)

Photograph by H. C. Ellis

A TRELLIS BUILT BY NAPOLEON I FOR HIS EMPRESS, MARIE LOUISE: COMPIEGNE

Like the Babylonian monarch who erected the famous Hanging Gardens to delight the eye of his princess, who amid the flat plains of Mesopotamia pined for her mountain home, so the first Bonaparte built this beautiful arbor to remind his homesick Austrian princess of her favorite trellis at Schonbrunn.

league concerning the troubles or the happiness about his hearthstone or the relationships existing behind the closed doors of his family residence.

What the Frenchman lacks, however, in talkativeness about his personal affairs he more than compensates for in his startling loquacity on things of a general nature; for in France intelligence is universal.

This does not mean that every Frenchman is well educated; it does not mean that he is widely traveled, but it does mean that mentally he is generally on tiptoes. As far as city and town life is concerned, it has been truly observed that "the sensation which France produces on the impressionable foreigner is, first of all, that of mental exhilaration."

And, be it remembered, this intellectual enthusiasm must not be classified as loose thinking. The French are astonishingly precise. Their intellectual precision is such that I am afraid it discourages their imagination. I cannot imagine a Parisian of the cultivated class indulging before his fireplace in those loose, wandering dreams in which so many Americans delight.

INTELLECTUAL CANDOR A NATIONAL TRAIT

Intimately connected with this attitude is the Frenchman's intellectual candor. Long accused by the Americans and the British of lacking this very quality simply because he does not make a public dissection of his personal inner life, he possesses, I believe, far greater intellectual frankness than either of his two allies, when dealing with the deeper problems of existence.

If he is an atheist, he is frankly one; if he is a believer in the necessity of some supposedly immoral tendency in man-

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Photograph by H. C. Ellis

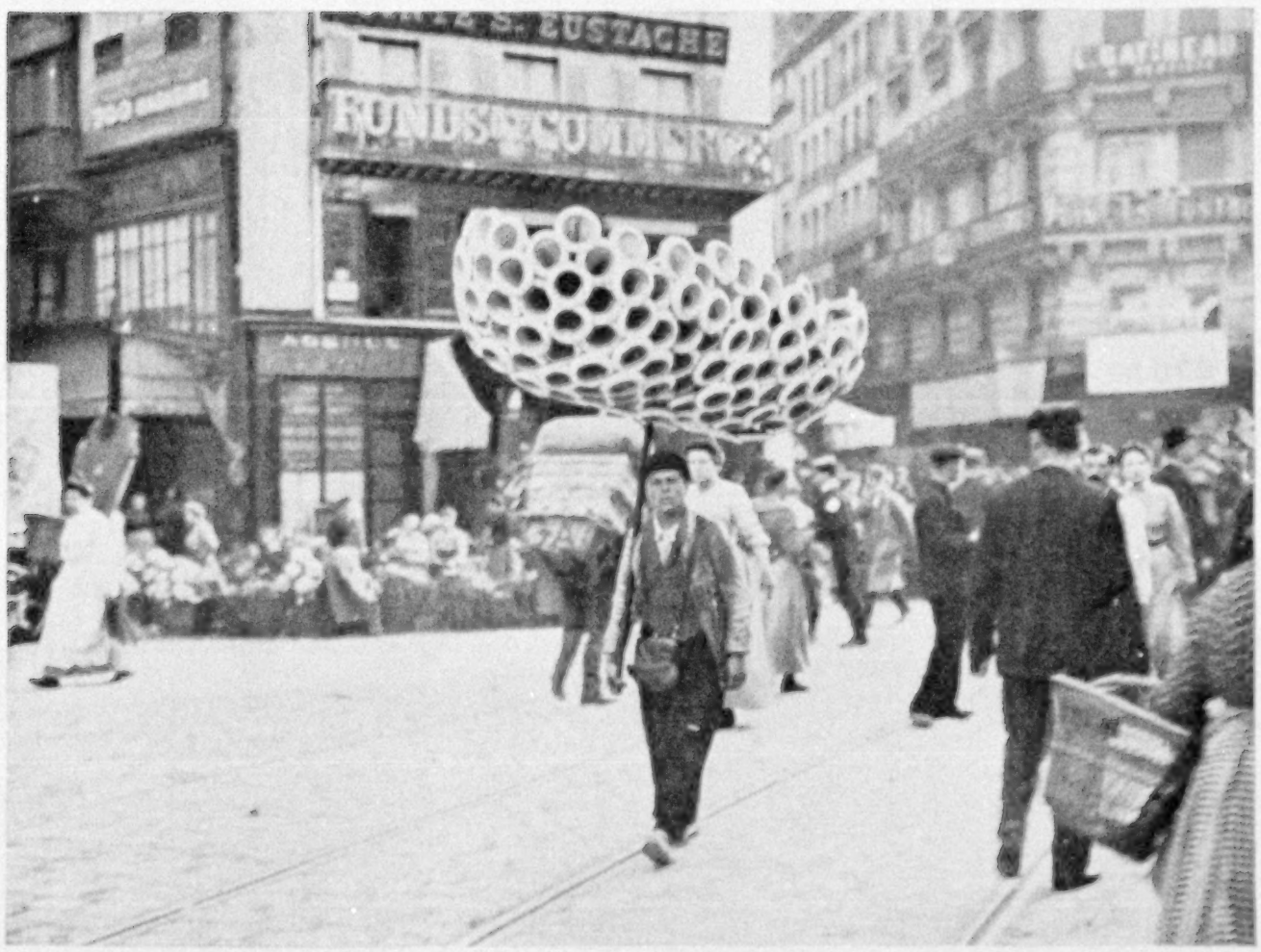
A WARD FOR THE CHILDREN OF THE POOR: FRANCE ENDEAVORS TO SAVE EVERY BABY WITHIN ITS BORDERS

The dowry custom in France has its good points, for it prevents hasty and poverty-ridden marriages; on the other hand, it is bad, for it deters marriage in a land where children are sorely needed and causes the French family to be small, so that the one or two children, when grown, may possess the proper financial attractions for marriage.

kind, he generally says so frankly; if the Trinity is beyond his conception, he does not camouflage his skepticism; unlike many Americans, he accepts few theories on faith, and what he cannot understand or accept he candidly rejects.

In the Frenchman, then, we find an unusual love of philosophy and a certain worship of reason which are rather discouraging to us more loosely thinking, more sentimental, Americans. Perhaps our tendency is to take too many ideas, facts, and things for granted; but the Frenchman, even of the lower middle classes, is always searching for a reason, an explanation, a more thorough understanding of this and that.

If at the table of my French hostess



Photograph by H. C. Ellis

A PERIPATETIC PURVEYOR OF FLYPAPER

He sells it rolled, so that the purchaser will not feel stuck up by his purchase

I inquired as to the origin of some word or the theory of some science, *voila!* an animated discussion immediately, a sifting of opinions, a peeping into dictionaries and encyclopedias, an astonishing volley of facts, and when the subject is dropped it is because that subject has been perforated, riddled, heartlessly dismembered.

But if it has passed through the dissecting-room its anatomy has forever been made clear to me. In other words, vague, sentimental reflections seem rather distasteful to the twentieth century Frenchman, and his bravery in acknowledging and facing facts might well be imitated to some degree by our own countrymen.

IN THE FRENCH SCHOOLS

Your Frenchman, from the boy in the lycée to the professor in the university, is sure that complex life can be reduced to a comprehensible system; his tenacity in developing and defending a logical system worked out from a given definition is wholly admirable.

Indeed, to one who has seen the lackadaisical air of the average American student toward the class-room discussion of some purely abstract idea, this French zeal in defending an intellectual point or theory, this seizing upon an abstraction as a sort of object of faith to be debated upon with enthusiasm, to be battled over if need be, comes as a pleasing shock.

If, therefore, any American still clings to the old-time opinion that the French are a frivolous people he should immediately revise his theory. They are startlingly serious and their very seriousness has led throughout their history to what has been called their tragic antagonism of conviction.

Such intellectual alertness would not allow any people to remain contentedly unanimous, but on the other hand has led to internal hatreds among the French so keen, so heated, that only a common intense patriotism has preserved safety.

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Photograph by L. Boulanger

GRAPE GATHERERS AT EPERNAY, CHAMPAGNE DISTRICT

Once the pride of France and the delight of connoisseurs of rare vintages, the fields of Champagne have been blasted by high explosive shells, sprayed with the steel of bursting shrapnel, and poisoned with the fumes of deadly gases. But French thrift will soon restore them, and smiling vineyards will again clothe these hills, concealing forever the scars of war.

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MUM

Photograph by H. C. Ellis

A STRANGE MIXTURE OF GENIUS: REAL FRENCH DEMOCRACY

Seated, beginning at reader's left: 1. Vanbiehl, said to have invented "Rock and Rye"; 2. Madame Rodin, wife of the sculptor; 3. Flammarion, the astronomer; 4. Rodin, the sculptor; 5. Madame Flammarion, wife of the astronomer; 6. Mlle. Chabas, daughter of the French artist and niece of Paul Chabas, painter of "September Morn." Standing, beginning at reader's left: 1. Auberten, one of the most gifted of modern French artists; 2. Mrs. Vanbiehl, recently in charge of Loie Fuller's girls, who have been dancing for our soldiers; 3. Madame Auberten, wife of the painter; 5. Loie Fuller; 7. Maurice Chabas, painter, brother of Paul.

Photograph by H. C. Ellis

A GROUP OF ARTISTS IN A BOHEMIAN CAFÉ: PARIS

The poet, Paul Fort (front row, second from the right), has just finished reciting one of his own compositions and seems well satisfied with himself

This worship of reason, this desire for precision and clearness, this regard for method and established procedure, has caused in business and governmental activities a curiously encumbering effect.

The profound faith prevalent in France in ticketing, labeling, and filing has led to what a British observer, Barker, has called "the plague of *petits papiers*." Indeed, he continued, "one is administered in France from the cradle to the grave, and sometime afterwards."

The mass of administrative machinery in many fields is astounding, even to an American, and the French themselves grin sarcastically, but patiently, over the amount of sheets, tickets, tags, and general red tape connected with the most ordinary activities of governmental life.

THEIR REVERENCE FOR CONVENTIONS

Nor is this profound regard for method and established procedure limited to affairs of government; it permeates all society and may be seen in the reverent attitude toward conventions and in a sort of social slavery toward petty observances handed down from the remote past. To an American, scornful of traditions, it is almost beyond understanding—this doing a thing generation after generation simply because it has long been the custom to do the thing.

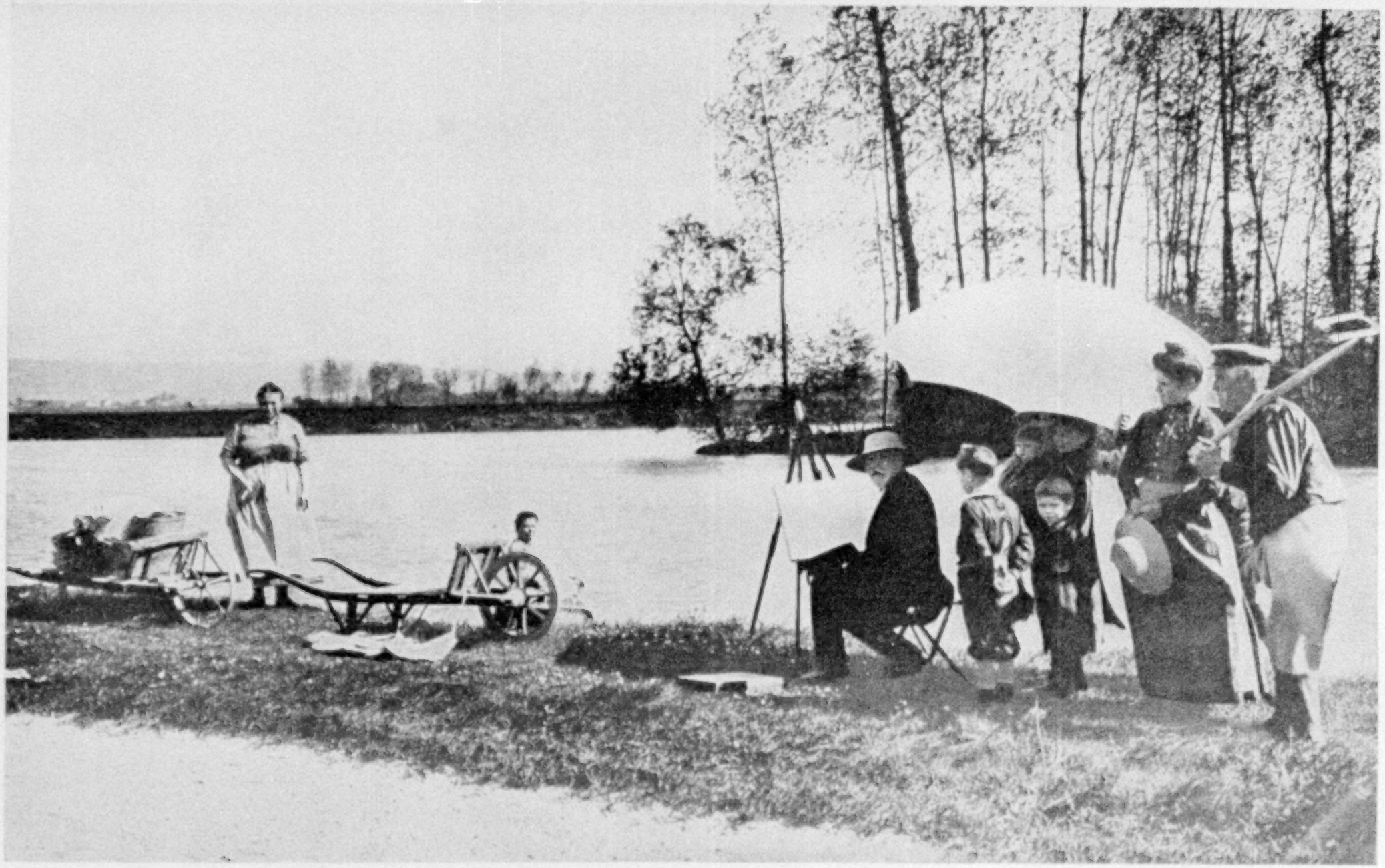
Naturally this close attention to method in daily life causes a reflex action upon all the mental processes of the French. Their constant regard for form and clearness has fostered a genuine passion for arranging, modifying, and combining all things symmetrically.

Revealed in their formal gardens, the exact balance found in their architecture and sculpture, their careful attention to exactness in musical counterpoint, and their orderliness in writing, this idea of form impresses itself upon the visitor wherever he turns. The explicitness, the certainty, the conformity to established

Photograph by H. C. Ellis

A FRENCH DESIGNER AND ARTIST: IN SUCH STUDIOS AND FROM SUCH HANDS ORIGINATE THE FASHIONS FOR WHICH ALL WOMANKIND LOOKS TO PARIS

This creator of fashion plates, Caprillo, turned his talents to the production of vivid war posters during the world conflict



Photograph by H. C. Ellis

L'HERMITTE, WITH HIS PEASANT MODELS ABOUT HIM, AS HE PAINTS ON THE BANK OF THE MARNE

"In the older paintings of France there was a decided liking for allegory, or symbolism, notably in the seventeenth and earlier years of the eighteenth century; but today there is a tendency toward the same realism and naturalism as is found in modern French literature"

ideals of fitness—these proclaim the intense sanity of the French mind. *What the French know, they possess.*

The Frenchman is terribly explicit. His exactness, were it not relieved by so many human qualities, would be excessively unsympathetic. The clearness of the language itself, its almost faultless precision, long ago made it the language of diplomacy; its very clarity reflexively conduces toward clearness in thinking.

THE MOTHER OF CRITICS

All this must connote a high degree of critical taste; for every one is constantly guarding against the vague, the unsymmetrical, the inelegant manner of expression; every one is constantly watching for things, ideas, and forms that appeal to the æsthetic nature. The result has naturally been that France is the mother of a majority of the keenest masters of criticism in modern times, not only in literature, but in music, painting, architecture, and sculpture.

If there is such a thing as being too sane, as some of our psychologists warn us, then France's extreme regard for the sanity, the orderliness, the symmetry of life may some day prove dangerous; but at present the wholesome, jovial, almost effervescent nature of these very human people shows little sign of such a peril.

One may expect to find, therefore, in French art a profound regard for what may be called the artistic proprieties—in other words, *style*. To a foreigner, French painting and sculpture may seem to possess more of order and movement than of profound motive.

Edith Wharton has said: "However lofty and beautiful a man's act or his purpose, it gains by being performed with what the French . . . call 'elegance,' . . . They do not care for the raw material of sensation: food must be exquisitely cooked, emotions eloquently expressed, desire emotionally heightened, every experience must be transmuted into terms of beauty before it touches their imagination."

Beauty is unquestionably present in their sculpture, painting, architecture; but whether one finds here the terrific energy, the abandonment, the fine frenzy seen in some of the work of the Italians is indeed a question.

In fact, French art sometimes seems to be more the fruit of intelligence than of overpowering genius. It is so absolutely finished, so decisively clear, that it leaves perhaps too little to the imagination. It reminds one of the dignified symmetry and grandeur of portions of Milton's *Paradise Lost*, but not of the stormy emotion of the poems of Burns or Byron.

One finds oneself, even in one's admiration for it all, secretly longing for a little irregularity, a touch of the unusual, a flash of the wild abandonment that often thrills one in the primeval wilderness.

But violence in any form has until very lately been rather repugnant to the French artistic sense—violence in color, line, and contrasts—and symmetry, ideal, restful, eternal symmetry, takes the place of successful audacity.

TRIUMPHS OF FRENCH ART

But in spite of all this, what nation has equaled France in high general level of artistic production? Where may be found her equal in Gothic architecture—her Notre Dame, St. Chapelle, the cathedrals of Rheims and Rouen? Where, too, may be found the rival of Paris in noble modifications of the Greek—the Madeleine, the Pantheon, the Palais Royal, and a score of others?

Repeatedly from the Middle Ages to this present hour the French masters have led Europe in finish and clearness of sculpture. An art lavishly supported from public funds, it has found expression in such marvelous works as Delore's "Triumph of the Republic," Barries' "The First Burials," and Rodin's "The Thinker," "Balzac," and "The Hand of God." In the older paintings of France there was a decided liking for allegory or symbolism, notably in the seventeenth and earlier years of the eighteenth century—it is so apparent in the work of Versailles—but today there is a tendency toward the same realism and naturalism as is found in modern French literature.

I fear that many an American looks upon French art as a thing of general

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Photograph by H. C. Ellis

THE FRENCH LOVE THE VARIED PROGRAM OF THE VAUDEVILLE: SCENE IN A PARIS THEATER

The histrionic ability of the French surpasses that of any other people. For them the theater is a great cultural and educational institution, and they support it with public funds in the same spirit that they support their schools.

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immoral tone. It may be that our Puritan instinct is shocked by the frequent recurrence of the nude in the paintings of France—as though the human body were something abhorrent and never to be admired among decent people.

But French art is not immoral; it is simply frank. Undoubtedly most of the money gained in Paris from salacious art comes from foreign pockets; for if a Frenchman seeks immorality he spends no money on poor imitations.

To judge French painting as it really is, one has simply to look at such masterpieces as Corot's "Matin," Lorrain's "Village Fête," Millet's "Gleaners," Rosa Bonheur's "Horse Fair," Jules Breton's "Return of the Harvesters," and Monet's "Cathedral of Rouen." The truthfulness, the simple dignity, the exquisite finish, of these painted stories from French life are proof enough that French art is the product of admirable skill and untiring patience.

THE DEBATABLE QUESTION OF FRENCH MUSIC

Many a French singer apparently has the skill, but many an American loses his patience trying to understand French music. In these times it may be heresy to say it, but French music seems to a foreigner to lack the deep emotional and ethical quality of the greater German music; nor has it that positive lyrical quality found in Italian opera.

There has indeed been considerable dispute among critics as to whether there is yet a distinctly national quality in French music. There are large numbers of charming old melodies, but these are provincial, not national.

There are, of course, approaches to national airs in the "Noels," or ancient Christmas songs, while "The Marseillaise" is and will long remain not only a national but an international expression of love of freedom. But all this does not prove the case for French music.

In light opera these people have undoubtedly far surpassed the Germans and the English, but in grand opera we may find constantly cropping out the influence of Italian and German masters. What we Americans miss is the *continued* melody, the completed lyrical composition, that sings itself in one's ears for days and perhaps months after one has heard the opera. Then, too, to an American the French voice seems rather thin, and even the French themselves will admit that only a few of their greatest singers have been native born.

But it must be remembered that most of the famous singers of the world have looked upon Paris as "home"; for here was the birthplace of such masterly compositions as Bizet's "Carmen," Berlioz's "Damnation of Faust," Thomas' "Mignon," Gounod's "Faust," Massenet's "Manon," and Saint-Saëns' "Samson and Delilah."

THE GLORIES OF THE FRENCH STAGE

One may qualify one's remarks on the music of the Frenchman, but who can overstate the glories of the French stage? "Most French people are born actors"; indeed, their histrionic ability probably surpasses that of all other nations.

Possessing exceptional mobility of feature, vigorous and dramatic gestures, a language so exact as to be almost mathematical, a natural clarity of expression, they have in their very infancy those characteristics for which actors in other lands toil a lifetime.

Then, too, Americans should bear in mind the vast advantage the French actor has in having, what America does not yet possess, *a national public interest in the theater*. In fact, the theater is part of the life of the nation; it is considered a branch of public instruction, under the control of the national department of education; its leading representatives at Paris—the Opera, the Opera Comique, the Odeon, and the Comedie Française—receive a large annual support from government funds, just as, for instance, the agricultural schools do in America.

The result has been such world-famous dramatists as Molière, Racine, Corneille, Sardou, and Rostand; such masters of acting as Alexandre and Constant Coquelin, Antoine, Mounet-Sully, and Sarah Bernhardt.

Just as histrionic ability is native to the Frenchman, so one might also declare that the *scientific* attitude is characteristic of a great number of the French. The average native has enormous curiosity;

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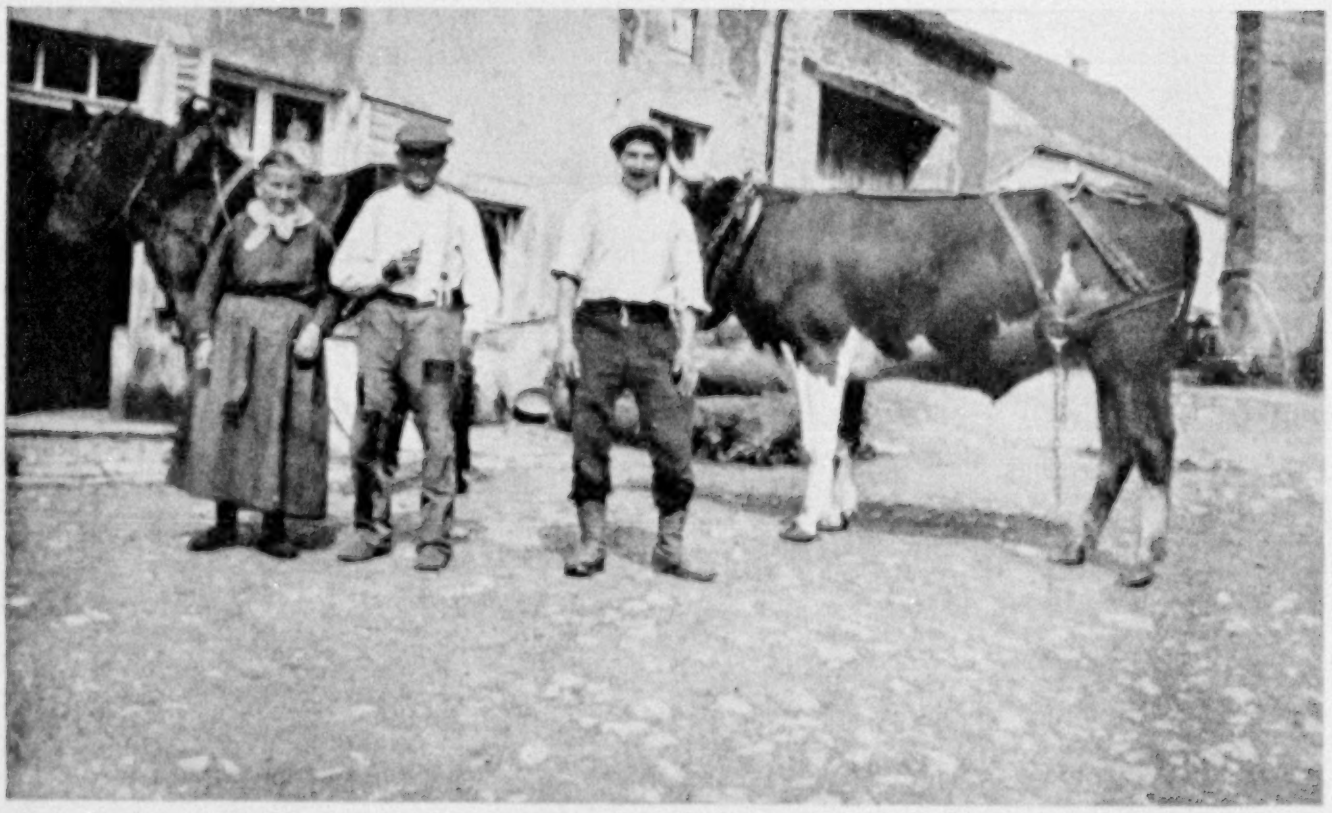
IN CASSOCK AND KHAKI: A FRENCH ABBOT AND AN AMERICAN LIEUTENANT IN A MONASTERY GARDEN

"Mainly Catholic in their traditions and sentiment, the common people still reverence the vast institution governed from Rome; but the educated classes, because of their belief in its opposition to certain democratic movements, have in recent years been rather alienated."



Photographs courtesy of W. L. Jaekal

A PEASANT HOME IN WESTERN FRANCE WHERE AMERICAN OFFICERS WERE RECENTLY BILLETED

The soldiers' hostess and host are to be seen at the left. Note the horse and the ox harnessed in tandem fashion. If this were in Austria or Hungary the woman would be the yoke-mate of the ox.

Photograph by H. C. Ellis

THE TOWN GATE AT PROVINS

Note the sturdy strength of the French peasant woman trundling a heavily loaded wheelbarrow and the two men in the cart riding toward her. The quaint old town of Provins in the middle ages was a great industrial center, having a population of 80,000, of whom 60,000 were workmen. At the beginning of the world war it had scarcely 8,000 inhabitants.

he likes to be shown how; he admires accuracy; he worships reason. The result is that today this nation holds leadership in Europe in the sciences, especially the applied sciences.

The French peasant has been accused of lacking imagination; but the imagination of the French scientist leaps to meet the correct solution, while the German scientist plods toward it.

THE GIFT OF FRENCH SCIENCE TO MAN'S WELFARE

What marvelous skill has the Frenchman shown in the application of science to human diseases and deformities; what marvelous research has been his in bacteriology, neurology, and pathology; what patience, what accuracy, what insight, has he displayed in clinical observation and description!

To realize what French science has done for man's welfare, one has simply to recall the names of Ampère, the investigator of electrical dynamics; Pasteur, the master of bacteriological research, conqueror of rabies, and founder of the famous institute that bears his name; Roux, discoverer of diptheria serum; Chantemesse of anti-typhus serum fame; Yersin, discoverer of the bubonic plague bacillus and its curative serum; Claude Bernard, marvelous worker in vivisection; Berthelot, founder of thermo-chemistry, inventor of smokeless powder and aniline dyes; Pierre and Madame Curie, discoverers of polonium and radium; and Flammarion, master and interpretor of astronomy. The list has but begun; it might fill a score of pages.

But let us turn once more to the more strictly human side of French life. What shall one say, for instance, of what we Puritan descendants consider so vitally

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Photograph by H. C. Ellis

A TYPICAL FRENCH KITCHEN IN A BETTER-CLASS HOME: THE COPPER KETTLES AND PANS ARE PERHAPS TWO HUNDRED YEARS OLD

In addition to being an extraordinarily good cook, the French woman is an exceptionally shrewd buyer, and to observe her at market is to learn much in economics, mathematics, and oratory. "She simply refuses to pay the first price quoted, and her genius for 'getting what you can' is admirable."

important—the ethical viewpoint of the nation?

Frankly, here is where the French and we have long misunderstood each other. Just as frankly, we Americans do not consider these people as of a profoundly religious temperament.

Your Frenchman is willing to admit that the church is a helpful institution, to be respected always and utilized at intervals; but when its religion undertakes to interfere with what he considers the natural activities of a normal life it is liable to receive a cold shoulder.

Mainly Catholic in their traditions and sentiment, the common people still reverence the vast institution governed from Rome; but the educated classes, because of their belief in its opposition to certain democratic movements, have, in recent years, been rather alienated.

Fortunately, the recent law separating church from state and the patriotic attitude of the clergy, whether Catholic, Protestant, or Jewish, in the present war has undoubtedly improved the standing of organized religion in the nation.

Morally the French are not an introspective people as were our Puritan forefathers. Your Frenchman does not always believe that his conscience decides aright; he does not rely implicitly upon it: he has an unhesitating belief in a sane following of natural instincts. Puritanism meant *restraint;* Parisianism means *expression.*

In the words of one observer: "To violate the heart's dictates, which are the direct behests of nature, is, in his eyes, either pedantry or folly. . . . It is not a question at all of a higher law, but of the natural instincts of man, which on the one hand he is to preserve from . . . depravity . . . and on the other to organize in such a way as to benefit that highly artificial institution known as society, in the direction of natural development, and not natural restraint."

The suggestions of culture, the dictates of science, the voice of society, must be considered, and one must distinguish between the anti-legal and the anti-social. Business immorality is a thing to be detested, affecting as it may the whole of economic society—a thing more dangerous than personal immorality, which is largely one's own business.

FRANCE MISJUDGED BECAUSE FOREIGNERS SEEKING SIN FOUND IT

France no doubt has its weaknesses, for which no excuses need be attempted. The immorality of women, however, in that great country has been shamefully exaggerated.

Because the foreigners seeking sin found it on certain Paris boulevards they concluded that this frank sexual advertising was characteristic of France, whereas the average French girl is as zealously shielded from temptation as was ever the daughter of the Pilgrim father. But to love intensely and passionately is the French girl's hope and desire; and why should it not be?

On the subject of sobriety one may not be so kindly a critic at present. A few years before the war there began a rapid increase in the use of alcohol, especially among the city working class and lower bourgeoisie—an increase indeed formidable to public health.

The use of light wines as a universal beverage may have had only a slight debilitating effect; but as the increasing excise duty on wines caused a greater demand for cheaper and more violent spirits, and as the use of absinthe and apéritifs became more popular, the rate of pure alcohol used per person in France at length reached in 1916 the entirely too large amount of 1¼ liters.

Nor has the war discouraged the drinking habit. Many a poor soul has found solace in the bottle after the day's drudgery of war work.

The Frenchman makes no pretext of hiding his love of the game of chance. Generally he is too shrewd to place large amounts at stake, but the sum total of the national betting must be an enormous amount.

Theoretically gambling is illegal, but under the name of casinos and clubs it thrives, and the government, always liberal and tolerant toward lotteries and other forms of the vice, collects approximately 15 per cent of the incomes of such places in the form of a license tax. Horse-race betting, like the casinos, is under strict government supervision, and

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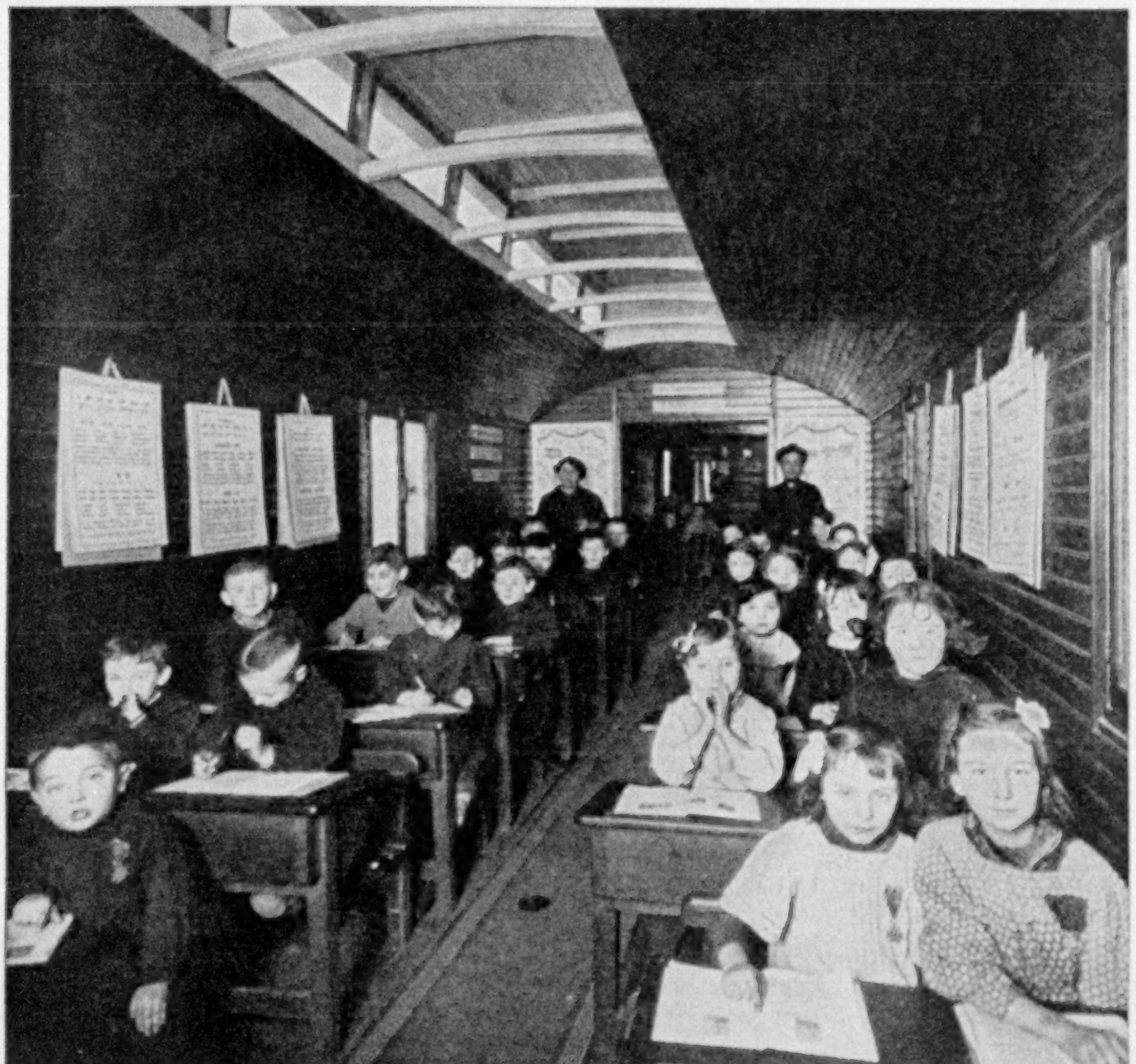


Photograph by H. C. Ellis

A SCHOOL ON WHEELS IN FRANCE

The children's parents are members of a carnival company, traveling from town to town, much like our circuses. Because their fathers and mothers lead a nomadic existence is no reason why the education of the youngsters should be neglected, and this is how the problem is solved by the alert and resourceful French.

nowhere may one find such honest gambling—if such a thing is possible—as in France.

THE DUELLING CUSTOM

Still another derogatory remark and we shall pass to more pleasant phases of French life. To us duelling is utterly ridiculous; to the French it is a quick and unostentatious manner of settling personal difficulties.

There is a code of conduct for civilized men and, in the Frenchman's view, a man should hold himself responsible for departing from it. Why carry such a matter, however, into the court? It is a private and personal affair. Why give it publicity in the newspapers and make lawyers rich and take the time of the judge and law courts?

A pistol shot or a slight thrust of the sword and the thing is settled, says your Frenchman. If the opponents are not killed they will both acknowledge that the code of conduct has been defended and vindicated; if one is killed the other

Photograph by H. C. Ellis

A BIT OF FUN OR A HUMANE PROVISION FOR THE COMFORT OF THIS PATIENT LITTLE PLODDER?

The trousers are supposed to keep off the flies, but the clever mountebank knows that they also attract attention to his traveling Punch and Judy show

may be prosecuted for homicide, but if it was a fair duel is almost certain of acquittal.

Often indeed a French duel has resulted from what we Americans would consider very small breaches of politeness. But we must remember that politeness is one of the most marked national characteristics; the courtesy of the French, "punctilious," as some one has called it, is but another evidence of their love of form, system, established tradition. "The French put the same intentions into manners that all civilized people do into language, and have systematized them with the same care for correctness on the one hand and pliability on the other."

This observance of traditionally polite forms is often irritating to the hasty American. I remember that after I had waited in line an hour and a quarter in a Parisian railway station to reserve a seat on a train I was dumbfounded to see two women clerks enter the office and hold up the entire business of the occasion to say good night and shake hands with every one behind the counter.

What is the use, says your average American, of this constant tipping of hats among the men, this constant shaking of hands when entering and leaving an office, this saying of farewell a dozen times before one goes? But the French know what they are about. Long centuries of such little courtesies have reduced the forms of politeness almost to a ritual, and every French boy, unlike every American boy, knows exactly what to say and how to act in every business or social situation.

THE FRENCH HOUSEWIFE WITHOUT AN EQUAL IN ECONOMY

The French have long been a shrewd, calculating people who have watched closely every sou. They may seem ro-

Photograph by H. C. Ellis

THE ARTICHOKE SECTION IN CENTRAL MARKET, PARIS

The immense quantities of vegetables eaten by the French counteract in a measure the effect of some habits less healthful

mantic to foreigners; their passionate protestations of love may seem too frank to us of Puritan descent; but in not only financial affairs, but even their pleasures, they minutely calculate all items.

Probably there is not in the world the equal of the French housewife in economy and efficiency. Before the war wages were astonishingly low in France, and there must have been continual squeezing of each franc; but, thanks to the ability of the French wife, who could tell from outside evidence that there was unusual stinting in the average home?

To see a French woman bargain at the market is to learn much in economics, mathematics—and oratory. She simply refuses to pay the first price quoted; her genius for "getting what you can" is admirable.

The Frenchman is not so careful and is too liable to be drawn to the café for a consoling drink or the seductive game of piquet; but the hand that holds the purse-string is the hand that rules the world—and the French wife holds it tightly. Her faith in small savings rescued France after the war of 1870, when vast horded wealth was willingly brought forth to pay the enormous national debt, and the same faith made it possible for France to preserve herself and the world during the world war.

FRENCH PARENTAL REVERENCE EQUALED IN CHINA ONLY

With such women, is it any marvel that the French home is so admirably united? The family is the primal social fact in France, and the parents are "the fundamental fact without which the organism (the family) could never have come into being." Hence there is a reverence for parents equaled probably only by the ancestral worship of China. Indeed, it is very doubtful whether the love between husband and wife equals that existing between parent and child.

NOT ALL THE GOOD FRENCH COOKS ARE EMPLOYED IN THE PARIS RESTAURANTS

"Probably there is not in all the world the equal of the French housewife in economy and efficiency"

There is constant consultation with parents and relatives by sons and daughters of advanced years—a form of consultation scarcely ever heard of in an American family.

If a Frenchman of thirty or thirty-five proposes changing his profession, he may consult not only his father and his mother, but the entire family group; the proposed marriage of a daughter or a son is often an occasion for a council of the entire clan, including distant relatives that in America would hardly be included in our family tree.

The world has been fond of pointing out that the French language has no word for "home." It has a word possibly even more tender. What a meaning is in the sound of "foyer"! It includes the concept of hearthstone and much more. It brings to the French mind and heart all the ideals, activities, and dreams of a close, inner circle where obedience is a joy, respect a willing observance, and love an ever-present radiance.

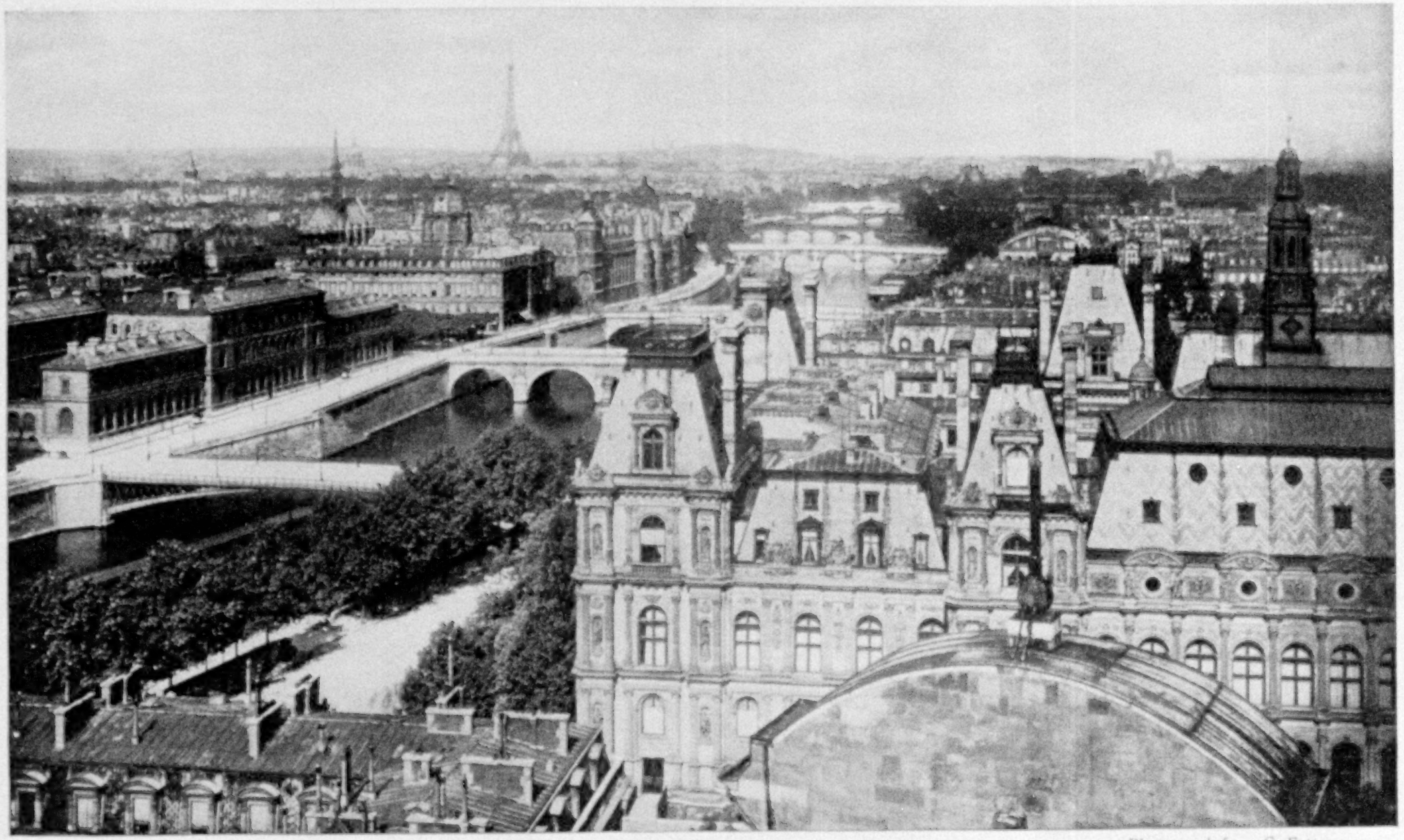
The foyer is not for the outside world; only behind locked doors does it really live and flourish. The father may deal with the outside world of business, but here in the foyer the mother generally rules supreme, and her influence is everywhere seen in it.

Is it any wonder that when one parent dies the other is immediately taken into the home of the married son or daughter, there to rule as a sort of benevolent, enlightened despot?

COURTSHIP AMONG THE FRENCH

Perhaps some youthful American reader of these pages has already asked, How can there be any courtship in so private a home, where everybody within the charmed circle is consulted about all the affairs connected with that circle?

As a preparatory step toward such a



Photograph from G. Fattorussa

PARIS: PERSPECTIVE OF SEVEN BRIDGES—VIEW TAKEN FROM ST. GERVAISE

The winding course of the Seine through the city, measuring seven miles, is crossed by 31 bridges. Rising from the river are two islands of considerable size: the Ile St. Louis and the Ile de la Cité. Thus the capital is divided into three parts—the quarters on the right bank, the Cité with the island of St. Louis, and the quarters on the left bank. In the distant background of this picture the Eiffel Tower looms to the left and the Arch of Triumph to the right.

Photograph by H. C. Ellis

A WOMAN'S WORK AT THE CENTRAL MARKET IN PARIS

Like London's Covent Garden flower market and the fish market of Venice, the Central Market of Paris is one of the sights of the city. Much of the heavy labor in this market fell to the lot of women even before the war so sorely depleted the man-power of France.

beautiful home life one would think that there should first be a most romantic love affair, with moonlight walks and whispered words of adoration and all the other pretty things found in the sentimental novel.

Unfortunately or fortunately—as you may view it—these accompaniments of American match-making are frequently totally absent from French courtship. Indeed, in the middle and higher classes of French society there is often very little possibility of love-making before marriage.

Owing to the family regulations and the fact that there are few coeducational schools in the country, the French girl seldom makes with boys those confident, personal friendships so common in America.

In the main the French mother prefers not to trust her daughter alone with a man; if they are to do any loving, it is better that they do it where she can keep an observant eye on them. In spite of such manifest difficulties in the preliminaries, the French girl probably desires marriage more ardently than the American girl confessedly desires it. There is so much supervision of the French lass in her home that her only release seems to lie in marriage.

Hence a remarkable docility in the matter of the choice of a husband. Some one has said that the French woman marries, not because of love, but with the hope of love afterwards.

With the letters of her sweetheart too often the property of the entire household, with too little opportunity really to "size up" the future husband, and with the necessity oftentimes of obtaining the consent of practically the entire family group, she cannot rely altogether on the

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Photograph by H. C. Ellis

TRUFFLES, USED FOR FLAVORING FRENCH DISHES: THIS HANDFUL IS WORTH ALMOST 500 FRANCS

Pigs and dogs are trained to hunt truffles. Some varieties, however, exhale so powerful an odor that their places of growth beneath the surface can readily be detected by the gatherers of the precious fungi.

dictates of the heart, but may accept the husband in a manner that would seem curiously business-like and matter-of-fact to the American girl.

THE DOWRY A TRUST FUND FOR CHILDREN

I have said that the consent of the family group is generally requested. To the French a marriage means readjustment of the entire family group, and obviously, according to French reasoning, all members of the family must be consulted.

And this "round-table" discussion deals often with matters so extremely material that under similar circumstances the American girl would feel shocked if not positively insulted; for extreme financial prudence enters into the conference.

In the better-class families a dowry accompanying the wife will practically be demanded. What does she bring with her? is the not uncommon question of the young man's parents.

Extremely prudential it all may seem; but one should remember that this dowry is not to be used by the husband for his personal use, but as a trust fund for the maintenance of the expected children. If the wife dies childless the dowry will, in all probability, revert to her family; the theory of the affair is that such property belongs not to the individual—either husband or wife—but to the family as an institution.

In some ways such foresight is good, for it prevents hasty and poverty-ridden marriage; in other ways it is bad, for it deters marriage in a land where children are sorely needed and causes the French family to be small, so that the one or two children, when grown, may possess the proper financial attractions for marriage. Hence, too, the unusual importance attached to the child in the French home. He or she is a somewhat expensive luxury; his or her intelligence may be unduly forced; he or she may become almost unpleasantly precocious; he

Photograph by H. C. Ellis

THE FOUNTAIN OF NEPTUNE, AT VERSAILLES

The leveling of the ground for the gardens and park of the palace at Versailles, the making of a road to Paris (11 miles distant), and the erection of the Aqueduc de Maintenon to bring water for the fountains from the River Eure are said to have occupied 36,000 men and 6,000 horses for years, while the palace itself cost in the neighborhood of $100,000,000, in addition to the forced labor exacted under the old feudal system. The fountains at Versailles only play on the first Sunday of each month from May to October and on special fête days.

or she must be given a bountiful start in life.

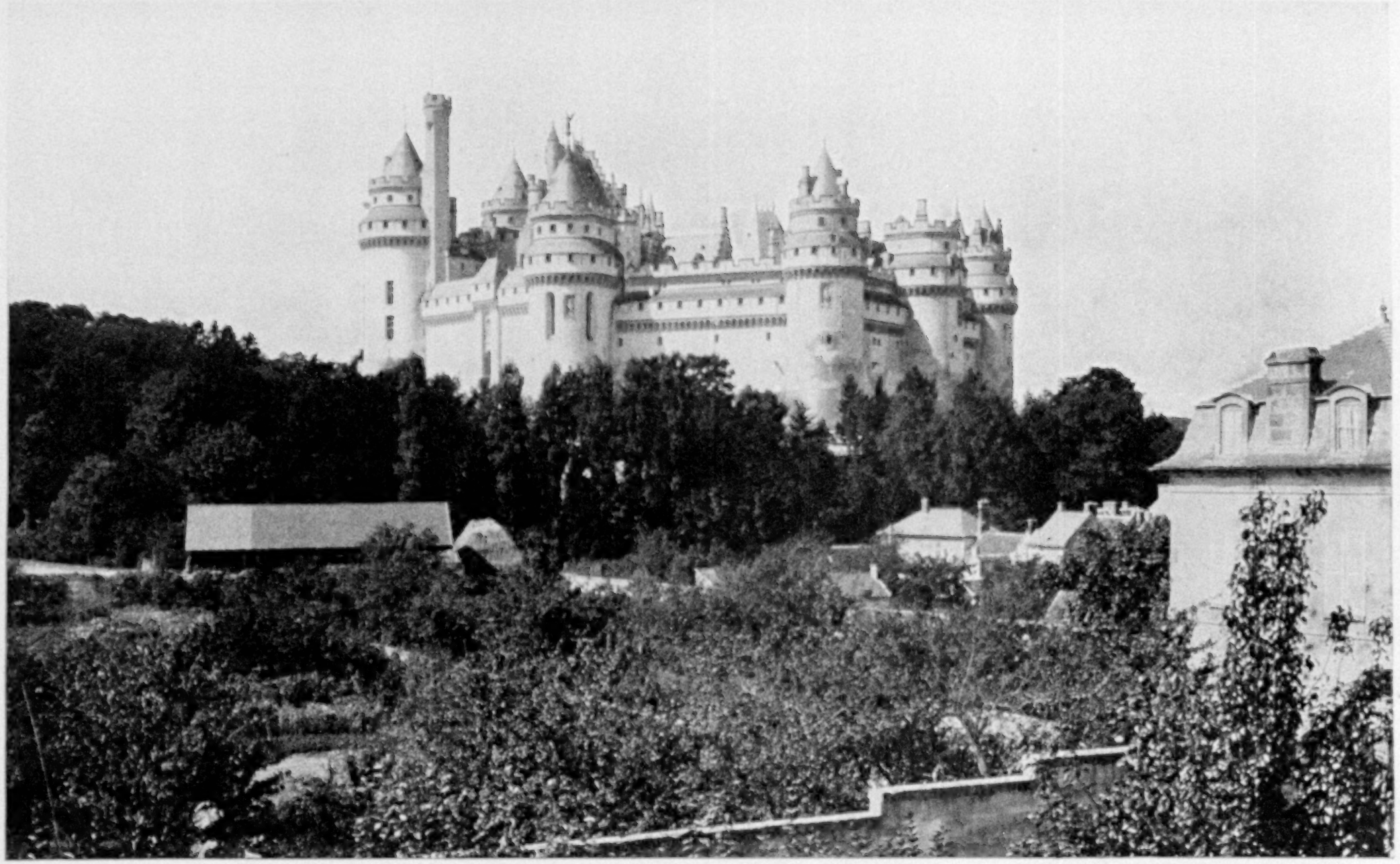
What is the effect of this attitude toward the child? To an American it makes the higher class French girl an adorably innocent and totally feminine woman—the number of international marriages during and after this war will prove the statement—while to that same American it makes the young Frenchman starting on a commercial or professional career seem rather lacking in that aggressiveness and daring so much admired in American business circles.

Again, for the sake of the child, the family and the foyer, the French wife is more likely to forgive transgressions of matrimonial rectitude than would the American wife. A father's neglect of his family is, in the French woman's eyes, far more criminal than the temporary straying of the husband into doubtful relations with another woman.

With us conjugal rectitude is of primary importance; with the French that rectitude which sees that the home remains intact and comfortable is more important. In other words, your French wife is likely to consider *domestic* faithfulness more essential, more to be demanded, than *conjugal* faithfulness.

NO MILITANT SUFFRAGE SPIRIT IN FRANCE

Such a home, such a privacy of domestic life, does not encourage the French woman to take a large part in the public life of her nation. For instance, there seems to be an astonishingly small interest among the average French women as to whether they shall ever be allowed to vote. They seem very willing, in their



Photograph by H. C. Ellis

CHATEAU PIERREFONDS: NORTHERN FRANCE

Situated midway between Compiegne and Villers-Cotterets, this imposing feudal castle was one of the most cherished relics of medieval times. It stood on a rocky height overlooking the village of Pierrefonds and was built by Louis of Orleans, brother of Charles VI, in 1390. Its walls are from 16 to 20 feet thick and its eight massive loop-holed towers rise to a height of 115 feet. It has suffered much during the war from aerial bombardment by the Huns.

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extreme femininity, to leave the matter entirely to the men.

And what a wonderful government these Frenchmen have made through their vote! Democracy is indeed the test of all national activities. The French government shows genuine respect for the *average* citizen; indeed, every Frenchman seems proud that he is simply an average citizen. Hence the whole tendency of the government is to work consciously against legalization of social inequalities.

Any man with ability and ambition can rise to any position. The bourgeoisie or middle class—that is, the traders, professional men, military officers, peasant-proprietors, etc.—is so large that all other classes are negligible, and necessarily there is extremely wide social equality.

Again, French democracy, since it is popular, is admirably authoritative. The people show a surprising submission to a large amount of state administration. It is not the supine submission found in Germany or the uninquiring attitude found in a large portion of England's lowest classes; it is willing, intelligent obedience to administrative machinery created by the people themselves.

Perhaps, as stated before, there is too much machinery; perhaps there is too much centralization of national activities under government control in one spot (Paris); but, after all, the widespread interest in active self-government, the healthful, vigorous, often passionate, public discussion, the political alertness of the people as a whole, means safety for France.

There may be too much centralization in Paris; but every Frenchman, whether he lives in a Normandy village or in the mountains that look toward Switzerland, is proud of this city that has long been the light of the world.

"The light of the world!" May not the words be applied justly to all France? What would Europe be without her? One can conceive of a Europe existing without Germany or Russia, but the glory of the continent would be extinguished if France should die. It is for her and what she has long represented in liberty that the world battled yesterday. That nation which seeks to destroy France is foredoomed to destruction.

THE PRICE OF LIBERTY, EQUALITY, FRATERNITY

THE price in stalwart young manhood which the French nation has paid during the world war to preserve human liberties has exceeded by appalling numbers the toll exacted of her associate Allies.

While France has not yet made an official announcement as to her losses, it is estimated that one million eight hundred thousand French patriots have laid down their lives on the altar of their country's freedom; one million gave limb, sight, or health, and were thus rendered permanently incapacitated for their accustomed pursuits of peace; one million two hundred thousand others sustained injuries which have retarded their activities.

Thus, four million men is the tribute that war has exacted of what Mr. Holliday rightly characterizes as the most civilized country on the globe for the salvation of her own people and the safeguarding of her democratic institutions.

What if America had suffered such losses in proportion to her population? Every man between the ages of 21 and 30 who registered for military service in the United States on June 5, 1917—more than nine and a half million in number—would be a casualty today, and there would still be a million and a half men to be added from the registration lists of September 12, 1918. Mothers, fathers, wives, brothers, sisters, and sweethearts would be mourning for five million American dead.

For every ten men, women, and children in France at the outbreak of the war one able-bodied citizen in the prime of manhood has either laid down his life or suffered bodily injury. The casualties in no other army save the Serbian even approached such sweeping percentages.

Truly, the sons of France gave themselves without stint for the cause of world democracy.

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VIEW OF THE HOLY OF HOLIES OF RUSSIA, SHOWING THE HIGH WALL AND LOFTY WATCH-TOWERS WHICH INCLOSE IT

Originally a fort, the Kremlin is now museum, mausoleum, and treasure-house of things precious in Russian life and Russian religion. In no other equal area in the world is there crowded such an array of historic cathedrals and monasteries, sacred relics, trophies of war, sacerdotal robes, gold and silver vessels, precious stones, pearls, and jewels to the value of millions of dollars, etc. The principal buildings, reading from the left, are: (1) Treasury and Museum; (2) Grand Palace; (3) Cathedral of Annunciation, where the Tsars were baptized and married; (4) Cathedral of Archangels, where all the Tsars were buried until Peter the Great; (5) Cathedral of Our Saviour behind the Golden Gate; (6) Cathedral of Assumption, where the Tsars were crowned (see pages 381 and 382); (7) The Bell Tower; (8) Monastery of Miracles (see page 384).

THE REBIRTH OF RELIGION IN RUSSIA

The Church Reorganized While Bolshevik Cannon Spread Destruction in the Nation's Holy of Holies

By Thomas Whittemore

THE Holy Kremlin of Moscow has become a Bolshevik fortress. From the 9th to the 16th of November, 1917, for more than seven days under a hurricane of fire, the city was stormed and finally carried by the Bolsheviks in terrible fratricidal war. Since then the sacred citadel has been playing a new and ignominious rôle in the history of Russia.

From the time of the building of the Church of the Beheading of St. John Baptist and of the little Church of our Saviour in the Forest, bespeaking the days when the acropolis was still a wooded hill, a multitude of churches and palaces, witnesses of Russia's glory, have written here a national document in stone. The history of Russia is the history of the monuments of the Kremlin.

During the bombardment a Chinese workman, looking on, was heard to say, "The Russian is not good; bad man; he shoots on his God."

Outraged and despoiled, the Kremlin is in bonds today, guarded by foreign mercenaries. The forty times forty churches of the white stone city seem to draw a little closer in answer to the trumpet calls of the Kremlin domes. The battered towers and shredded gates, from which red flags are defiantly flung in the face of Russia, still stand bravely to protect the sacred site.

Deputations from the Sobor, or Russian Council, now sitting in Moscow, have abjectly to ask the Bolshevik committees' permission to hold services in the churches of the Kremlin. If the Bolsheviks dared, they would long since have declared the churches of the Kremlin to be museums, and so extinguished their light of faith.

The representatives of the Church have acted in fearless determination that the churches should continue to function, and have continued their sessions amid the violence and destruction raging on all sides of them (see also pages 392 and 393).

Entrance to the once always open Kremlin is now only by permit, through the Troitsa gate. All day long a moving line of people on various missions, showing their passports at the window of a little wooden kiosk, beg to be allowed to enter.

A SCENE OF SACRILEGE WITHIN THE KREMLIN

Once within the walls of the Kremlin, one faces piles of ammunition, barbed wire, and ugly miscellaneous heaps of rubbish. Austrian, German, and Lettish soldiers, some frankly in their enemy uniforms, are lounging about or standing guard. Army motor-lorries and cars carrying dark, sallow, un-Russian-faced government officials tear up through the gates, shrieking a curse, so it seems, as they enter upon all-hated Christian Russia.

The farther one walks about and sees the outraged fabric on all sides, the stronger becomes the feeling of grief. With indescribable emotion, one enters the resounding stone inclosure near the Cathedral of the Falling Asleep of the Mother of God. Here are still to be traced the stains of enormous pools of blood in which floated human fragments, tracked about by daring feet.*

* Many notes of personal experience and all the photographs of the Kremlin which illustrate this article were graciously given me in Moscow by my friend, Bishop Nestor, the distinguished missionary bishop of Kamchatka, who took them himself in the Kremlin by permission of the Bolshevik government.

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PROCESSION OF THE FAITHFUL IN MOSCOW IN THE RED SQUARE, SHOWING THE WALLS OF THE KREMLIN AND THE CHURCH OF THE BLESSED BASIL IN THE DISTANCE

The revolution has brought intellectual Russians a long way from the cold indifference, the empty churches, and the forgotten traditions of their faith

EXTERIOR OF THE USPENSKI CATHEDRAL (SEE PAGES 379, 390, AND 393)
Showing the shell hole in the central dome. In this church the Tsars were crowned.

The Cathedral itself has been badly treated. A shell struck its central dome and, bursting among the five domes of smouldering gold, viciously smote a second. The hole in the chief dome between the ghostly frescoes of the saints measures 7 feet in length and nearly 6 feet in width. In the drum of the dome is an ominous crack.

DEVASTATION INSIDE THE CATHEDRAL

The damage has not even yet been examined in detail by architects, and it is not known, therefore, whether such wanton devastation can be repaired.

The window glass is everywhere smashed or shot through. Within the Cathedral there are strewn about splinters of a 6-inch shell, which exploded there, and fragments of white stone, brick, and rubble. The gold and silver candelabra, those constellations among which all within the church seems to float through space, are bent as by storm; the Altar and the Sanctuary are strewn with broken glass, brick, and dirt; the Shrine of the

INTERIOR OF THE USPENSKI SOBOR, OR THE CATHEDRAL OF THE FALLING ASLEEP OF THE MOTHER OF GOD

Showing on the pavement the shattered fragment of the shell-struck dome. This great edifice, formerly the burial place of the Patriarchs, was built by Fioraventi, of Bologna, in 1475-79. Though repeatedly devastated by plunderers or fire, it has always been restored in its original form. Among its many relics were "the shroud of Christ, the robe of the Virgin, and a nail of the true cross" (see pages 379, 381, and 393).

Holy Martyr, Patriarch Hermogen, is covered with fragments of stone and rubbish.

This is the church built by Fioraventi of Bologna, in which the Tsars were crowned and in which the earlier Patriarchs were laid to rest. It is the precious reliquary of Russia's rich inheritance of the treasure of the ancient Eastern Church.

THE MARVELOUS EASTER SERVICE

In the days before the suppression of the Patriarchate by Peter the Great (see page 390), on Good Friday—or, as the Russians say, Great Friday—the Patriarch, in humble imitation of our Lord's entry into Jerusalem, rode on an ass from the Church of Blessed Basil, across the mosaic of fluttering doves, through the Gate of the Saviour, up to the Kremlin, but this year the new Patriarch, Tikhon, was forbidden entrance in the ancient way. Indeed, it was late on Easter Eve before His Holiness knew with certainty that he should be allowed to celebrate in his own Cathedral on the morrow.

In spite of the desecration, amid the ikon-clouds of steadfast witnesses to the faith, the Patriarch officiated at Easter.

There, on Easter Eve, for two hours before midnight, one hears the Acts of the Holy Apostles read. Meanwhile the lamps and candles, lighted one by one, swim like planets into our ken. The church swings in the shadows like a huge censer.

Then the gates of the sanctuary open and, in the vestments of royal purple, Patriarch, bishops, and priests, with silver and crystal crosses, like a torrent, flood the church with song: "Christ is risen!" they exclaim. "He is risen, indeed!" the people make answer.

The jeweled Gospels are thundered in different languages from the four corners of the church to all the earth. In the orchestra of voices the festival bell of the tower of John the Great companions the mighty voice of the archdeacon, Rosov, the Chaliapine of the Russian Church.

A HOLY MONASTERY OUTRAGED

It is all a vision of the forms and color of the Imperial Byzantine Court, in which the Church on earth pays her most splendid homage to Heaven.

A dreadful impression is produced by the present appearance of the Chudov Monastery, the "Wonder-working Monastery." The façade of the south side has been pierced by six heavy shells. In the rose-red walls are deep breaks and cracks and holes from 5 to 7 feet in diameter (see page 384).

Two shells broke through the wall of the Metropolitan's apartments, in which a member of the Council, Benjamin, Metropolitan of Petrograd, was staying. Inside the rooms there is complete destruction. Fragments of furniture are mingled with heaps of stone and rubbish.

In one room a shell pierced the immense, thick wall near a window and destroyed it as far as an ikon of the Mother of God which stood near, but the ikon and the glass over it and the lamp hanging before it were uninjured. The church in the monastery, where the relics of St. Alexis rest, did not suffer; only the windows were broken. The relics of St. Alexis had been carried to the catacombs church at the beginning of the firing.

There, beneath the low vaults, the Metropolitan, Benjamin; Archbishop Michael, of Grodno; the Prior, of the Chudov Monastery; Bishop Arsenius, the Elder Alexis, of the Zosimov Hermitage, and all the brethren offered their prayers day and night, under the unceasing rattle of the guns which shook the walls of the church.

GERMAN INVECTIVES MAR CHURCH WALLS

In the Church of St. Nicholas, in the belfry of the tower of Ivan the Great, a shell crashed through a window and destroyed the east wall of the interior of the Sanctuary. The large, magnificent old Book of the Gospels, which was placed against the ruined wall, was thrown to the floor near the Altar. The front cover was torn off, and the precious ikons of the Resurrection of Christ and of the Evangelists adorning the book were broken and thrown about; many leaves were torn and crushed.

The Altar of Oblation was broken and the service books torn. All over the Sanctuary bricks were scattered about, with splinters of shells and various eccle-

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SHATTERED EXTERIOR OF THE CHUDOV MONASTERY, COMMEMORATING A MIRACLE OF THE ARCHANGEL MICHAEL (SEE PAGE 383)

This is one of the most celebrated monasteries in all Russia. It occupies the land which was given to the Metropolitan Alexis in 1358 by a grateful Tatar Khan. Inside there is complete destruction. Fragments of furniture are mingled everywhere with heaps of stone and rubbish.

siastical objects, heaped up between the Altar and the Royal Gates, but the Altar itself, in spite of its nearness to the ruin, was uninjured.

In the Church of St. Nicholas lies a part of the holy relics of the Prelate Nicholas, a saint honored by all Christians and even by the heathen. The walls of the entrance to this church are written over with the most filthy and sacrilegious inscriptions and invectives, not only in Russian, but (more significant of the leadership in all this despoliation) in German. The entrance of the church where the relics lie was used as an outhouse.

MADMEN DIRECT A RAIN OF DESTRUCTIVE SHELLS

When raining destructive shells on the Kremlin, the madmen evidently decided beforehand not to spare one of the churches; and, in fact, traces of the crime are left on all.

The famous porch of Lodgetti, of the Church of the Annunciation, from which Ivan the Terrible admired the comet, is destroyed by shot and shell. Miraculously, the age-dimmed interior of this remarkable little church is unharmed. The jasper floor which the Shah of Persia gave to the Tsar Alexis, the floor of many-colored jasper, like an Apocalyptic sea, binding the door-posts and lintels, set with precious stones, remains like a ponderous Byzantine cope-clasp.

The Church of the Archangel is scarred with the marks of shells. The Churches of the Resurrection and of the Deposition of the Robe, the oratories of the ikon of the Mother of God of Pechersk, and the Church of the Forerunner, in the Borovitsk Tower, domes like a garden of Hafiz, or Omar Khayyam, all fell beneath sacrilegious fury. The last-named church came in for severe usage, and some shots struck the ikons of the sainted Prelates of Moscow and of the Mother of God of Kazan.

DIAMONDS AND PEARLS IN RUBBISH HEAP

The Patriarchal Sacristy, containing treasures of incalculable value, has been turned into a heap of rubbish, where, among sand, rubble, fragments of the walls, and broken glass, the unholy hand digs for diamonds and pearls (see p. 387).

The worst devastation has occurred in Room No. 4, which was pierced by a bursting shell. Here several glass cases and cupboards with precious ancient covers, or palls, ornamented with gold and precious stones, were torn to shreds. Some memorial palls were pierced and completely ruined.

A book of the Holy Gospels of the twelfth century (1115), of the Grand Duke Mstislav, of Novgorod, was injured by a splinter. Various precious objects and ornaments of the Patriarchs, such as mitres, gauntlets, church utensils, vessels, and crosses, are all thrown out of the cases onto the floor and broken to pieces.

Another shell, in Room No. 6, destroyed a case containing Patriarchal vestments. The historical Russian ecclesiastical treasury, the noble monument of the past Patriarchal life of a great nation, is shattered.

Subsequently, after the Bolsheviks had assumed protection of the treasury and locked themselves into the Kremlin, these rooms were broken open and ruthlessly looted by some of their own company.

GEMS GOUGED FROM ORNAMENTS

In their haste to rifle the cases and in their indifference to the national significance of the treasury, these robbers wantonly ruined ecclesiastical ornaments by brutally gouging out the gems or ripping off their golden mountings, and by cutting out the jewel-studded medallions from the vestments made of ancient stuffs, in which weaver and goldsmith wrought with a mutual hand. Some of the treasure has been recovered, but most of it is either destroyed or irrevocably lost.

What hope is there for the safety of the Hermitage treasure brought from Petrograd in wooden boxes now lying in the Kremlin?

The Church of the Twelve Apostles is riddled with shot. Furrowed by shells and broken, its east end lighted by holes and cracks, it gives the impression of being held together by some miracle.

One shell pierced the wall from the south side, below the window, and burst in the church, causing much destruction; the standard candle-holders were broken and many ikons on the walls injured by splinters.

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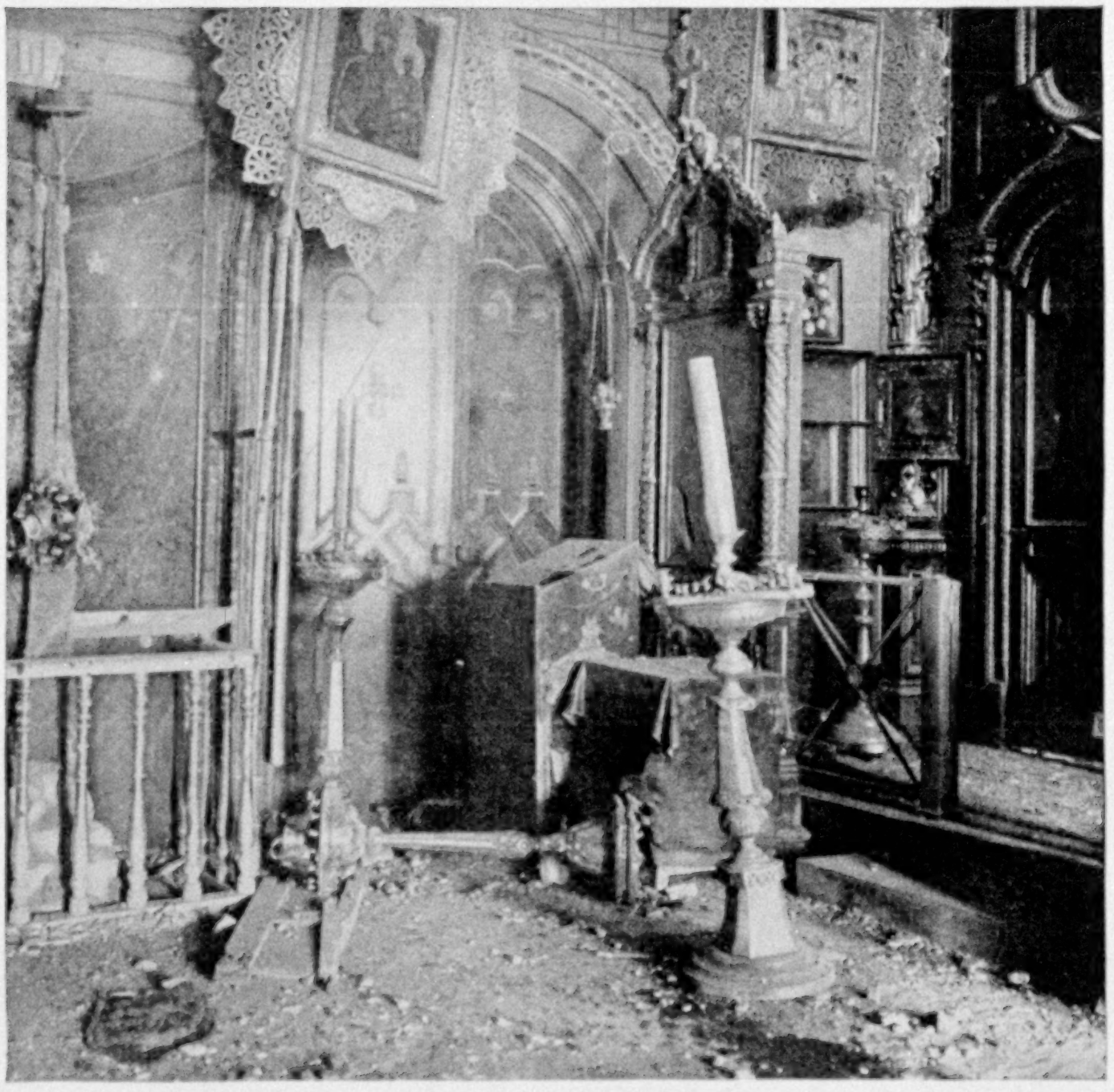

OUTRAGED AND DESPOILED

Broken and twisted candelabra, shattered windows, battered ikons, crushed and trampled-upon sacred vessels—such are the scenes which greet the eye of the worshiper in many of the "forty times forty churches" of Moscow today.

On a large crucifix, standing by the north wall, the outstretched hands of our Saviour were broken off. The figure was gashed with sharp bits of brick, and oil from the hanging lamps had poured over the whole. Red spots made a startling likeness of a living body covered with blood.

Some pilgrims who had succeeded in getting into the Kremlin, on approaching this sacred object, were unable to look at it and gave way to their grief, passionately embracing the feet of Christ crucified afresh (see page 388).

The little Nicholas Palace, which formerly belonged to the Chudov Monastery, suffered severely from the attack. From the outside, one peers into great holes in the walls. Inside all is complete devastation. The great mirrors and other furnishings of the palace have been barbarously demolished, cupboards broken into, and their books, deeds, and papers scattered through all the rooms.

The Church of Saint Peter and Saint Paul in the palace was pierced by shell and laid waste. The ikonostasis was broken, the Royal Gates forced open by

DESPOLIATION OF THE PATRIARCHAL TREASURY, SHOWING THE GOLD AND SILVER CHALICES (SEE PAGE 385)

Among the sand, rubble, shattered walls and fragments of glass, unholy hands rummaged for jewels which were knocked from their settings in sacred vessels

the shock of the explosion, and the curtain rent in twain. Many valuable ikons were stolen.

The Law Courts are knocked about, and the cupola of the famous Catherine Hall is pierced by shell. In the rooms of the experts or detectives, the fools of revolutionaries, coming upon the poisoned organs, abortions, etc., had devoured them because they were preserved in spirits!

The Nicholas Tower and Gate, where Napoleon, in 1812, broke the ikon of the sainted Prelate Nicholas, but which has remained uninjured since that time, has now been subjected to heavy fire and riddled with shot and shell (see page 391).

The case covering the ikon of St. Nicholas is ruined; the canopy above the ikon is broken and hangs by a nail. On one side the image of the angel is broken and that on the other side of the image is pierced.

The representation of St. Nicholas between has been preserved, but around the head and shoulders there is one continuous pattern of shot holes. At the first glance it seems that there is no ikon, but, on looking more carefully through the dust and rubble, there appears first the stern face of the saint, with a wound on

A GRIM MONUMENT TO REVOLUTIONARY SACRILEGE

Furrowed by shells and riddled with shot, this noble edifice, the Church of the Twelve Apostles, presents an even sorrier spectacle within (see page 385)

the right temple, and then the whole figure, considered always as the defense of the Holy Kremlin.

THE GREATNESS AND THE GLORY OF THE KREMLIN

The Gate of the Saviour was till now honored by traditional custom, where every one who went through, even the foreigner and the pagan, bared his head as a mark of reverence. Now no one enters here and armed guards stand smoking cigarettes, scolding the passers-by, and quarreling among themselves.

The famous clock with the musical chimes is shattered. The hands stopped at the moment when a heavy shell broke into the Kremlin wall and left its indelible trail of blood and shame on this hallowed heart of Moscow.

One would like, as so many have said, to open the Kremlin gates that all people, not only of Moscow, but of all Russia, might see the ruin of their sacred places.

What will wash away all the uncleanness, Russians ask, by which the Russian barbarism directed by the enemy has defiled the Kremlin?

It is impossible not to recognize that in the Kremlin are found the history of the art, moral strength, might, greatness, and glory of the Russian land. If ancient Moscow is the heart of all Russia, then the altar of this heart is the Kremlin.

A sacrilegious attack upon it could be made only by madmen or by men to whom nothing is holy and who are incapable of understanding (whatever Russia's future is to be) the significance and importance of this monument of Russian history. It cannot be considered a sufficient reason that the artillery fire directed against the Kremlin had for its object to crush the handful of officers and cadets who were within.

Not daring to approach, Bolsheviks searched for them with shell, injuring now the dome of the Cathedral of the Repose, now the Church of the Twelve Apostles, now the Tower of Ivan the Great, now the Chudov Monastery, and so on, in turn, almost to the last church.

Alas! This crazy fallacy is characteristic of the self-imposed government. What they did in the Kremlin they are doing today throughout Russia. One would like to believe that, if these men were once Russians, all consciousness of love for their country had been drained out of their hearts before their subservience to the enemies of all that is to a true Russian dear and holy!

Now these wounds have been bound up, as far as is possible, by merciful hands, as if bandaged, propped up by splints, and covered with sheets of iron, so that the winter shall not do still greater damage.

THE ORTHODOX CHURCH RISES FROM THE RUINS

A seventeenth century tale begins: "What man ever divined that Moscow would become a kingdom?" The twentieth century historian may wonder how the Kremlin could have been the target of such violence.

What further struggle and suffering await the Kremlin no one knows. No foreign eyes friendly to Russia remain in Moscow now to see.

The violent commotion which is shaking the life of Russia, typified physically by the wrecking of the Kremlin, is finding its first visible reaction in the reorganization of the Russian Church.

In the cities, where life courses more rapidly than in the country, the people, or a great part of them, are perceptibly returning to the Church, but in the villages a mental bias, which originated in the cities, amounting to an absolute denial of the Church's moral and religious teachings, is apparently prevailing. The peasant's faith is shaken, but the Intelligencia are again kissing the Cross.

The manner in which the revolution is affecting the Church, and its consequences with regard to external organization is already sufficiently clear.

From the middle of the seventeenth century two opposite paths opened before Russia: the path blazed by St. Serge and the path of Peter the Great. St. Serge's path led up to statehood in the moral consciousness of Russia. Peter the Great drove Russia into the establishment of an enforced empire held together by autocracy.

Peter, in his determination to centralize autocracy in Russia, placed at the head of the Church administration a *collegium*, to which was given the name of the Holy Governing Synod. This consisted of ecclesiastics of different grades, over whom, by Peter's decree, the reigning Emperor was instituted supreme civil judge. The Holy Synod was assisted by the presence of a High Procurator appointed by the Emperor, an official whose duty it was to see that the Synod's dispositions should conform to the laws of the State and to its interests.

The Russian Church has not since that day drawn a free breath. No ordinance of the Synod could be promulgated, unless confirmed by the secular authority. The ecclesiastical members of the Synod were appointed and summoned to take part in its labors by the Emperor alone.

When, in 1917, the imperial power was abolished, the Russian Church faced the question of organizing her administration afresh.

Under the past imperial régime, the secular element, in the person of the Em-

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peror and of his representative, the High Procurator, assumed a predominance incompatible with the spirit of the canons of the Orthodox Church. There was danger that, as a consequence of the recent revolution, the head of the democracy might assume a like predominance. The only way out of this menacing situation was to convoke a council, which is the supreme normal organ of Church legislation, administration, and justice.

The Council assembled in Moscow on the 15th day of August, 1917. It was opened in the Church of the Falling Asleep (*Uspenski Sobor*), within the hallowed precincts of the Kremlin. The Metropolitan of Moscow, Tikhon, was elected President; the Vice-Presidents were the two Archbishops—Arsenius, of Novgorod, and Antonius, of Kharkov—and two presbyters, one of whom was Father Nicholas Lubeimov, chief priest of the army and navy, and two laymen—Professor Prince Eugene Troubestskoi and the President of the Duma, M. V. Rodzyanko; later Mr. Alexander Samarin was elected a Vice-President (see pages 379-382).

"WE WISH TO HAVE A FATHER"

The first question to be settled was this: should the Patriarchate be restored? Some of the peasant members spoke energetically to this end, declaring that such were the instructions from their constituents. One of them said, "We wish to have a father."

In Russia's present condition a declaration from the most numerous class of the Russian people possesses a peculiar weight; but the idea of the restoration was vigorously opposed by a group headed by the liberal professors and by several priests. When, however, a considerable majority declared in favor of the Patriarchate, the opponents received the decision calmly, and most of them set to work heartily to assist in its realization.

So the Patriarchate was restored. But it was not restored in the form it had in Russia in the sixteenth and seventeenth centuries. In those days the Patriarch was invested with excessive personal power, which did not strictly conform to the spirit of the Orthodox Church.

The Council narrowly defined the position of the Patriarch as that of "the first among equals," on a par with the other organs of the higher Church administration, the Holy Synod and the supreme Church Council, of which the Patriarch is president. He is awarded a position much like that occupied by the Patriarch of Constantinople, but with some extension of rights, compared to those given to the latter by the statute of his local Patriarchate.

THE ELECTION OF THE PATRIARCHATE

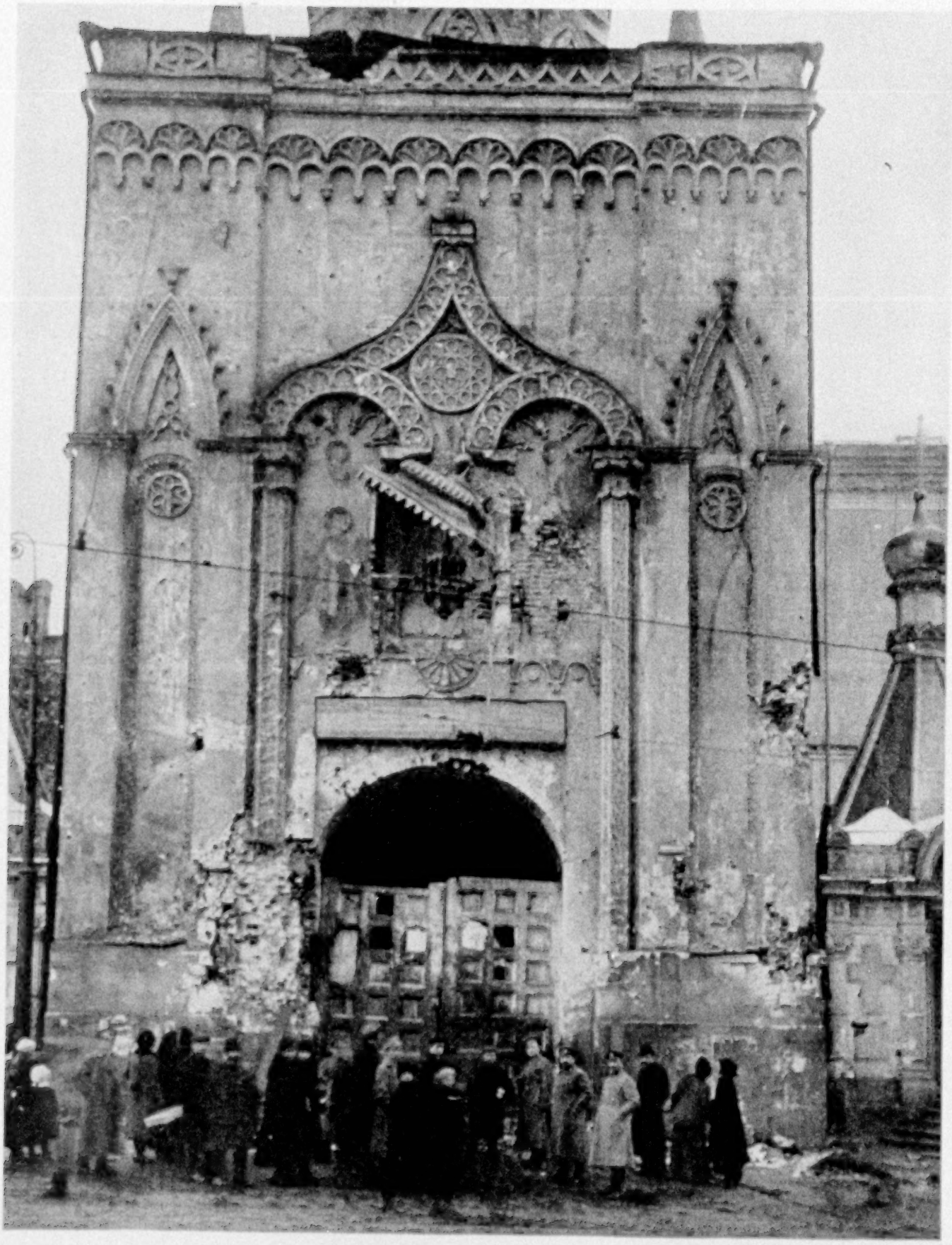
The election of the Patriarch took place during the time of the armed conflict in Moscow, when part of the city was cut off from the building in which the Council has its sittings. The election, however, took its perfectly regular course, a sufficient number of members being present.

Under strict observance of the rules for elections established by the Council, and with the participation of the members who represented all the Church elements, three candidates were chosen: Tikhon, Metropolitan of Moscow; Arsenius, Archbishop of Novgorod, and Antonius, Archbishop of Kharkov.

A few days later a solemn service was celebrated, after which three tickets bearing the three names were dropped into a special casket. Father Alexis (who is distinguishable by his black cowl and white beard and is sitting at the right in the second row of the Assembly, page 393), a holy monk and recluse, vowed to the solitude and absolute silence of the monastery of Zosimov (a dependence of the Troitsa-Sergian Laura), being thereto appointed by the Council, in the presence of the assembled people took out one of the tickets, on which was found to be inscribed the name of Tikhon.

As ordained by the Council, the Most Reverend Metropolitan Tikhon was at once proclaimed Patriarch of Moscow and all Russia. He represents the new birth of the free Russian Church, the new Father.

Two illustrations which accompany this article show the Council of the Sobor in session (pages 392 and 393). At the end of the hall, within the inclosure of



ST. NICHOLAS GATE AFTER BEING SUBJECTED TO HEAVY GUNFIRE

The case covering the ikon of St. Nicholas is ruined. The canopy above the ikon is broken and hangs by a thread. The ikon itself, just over the gate, has survived both the guns of Napoleon and of the Bolsheviks. On St. Nicholas' Day this year it was not only decorated with a garland of fresh flowers, but surrounded by a spiritual wreath of popular fervor (see page 387).

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THE FIRST ALL-RUSSIAN COUNCIL OF FREE RUSSIA: IN THE CHURCH COUNCIL CHAMBER IN MOSCOW

The Patriarch and the Metropolitans are distinguished by their white cowls in the foreground. The members of the Council represent the national duma, the army and the navy, theological academies, academies of the arts and sciences, and of the universities. It is the most representative party of men assembled in Russia today (see page 395). The Council's sessions proceeded calmly, amid the violence and destruction raging on all sides.

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THE CHAPEL AT THE END OF THE HALL IN WHICH THE COUNCIL SITS IN MOSCOW

The central figure is Tikhon, the Metropolitan of Moscow, who was elected President of the Sobor and later chosen Patriarch of all Russia. At his right is the Metropolitan of Novgorod and at his left the Metropolitan of Kharkov. From left to right are the Archbishop of Kherson, the Archbishop of Mogilev, the Archbishop of Grodno, and the Metropolitan of Yaroslav, the Metropolitan of the Caucasus, the Metropolitan of Vladimir, the Archbishop of Tver. In the upper row, from left to right, are the Archbishops of Viatka and Kolonna and the Bishops of Tchernigov, Kaluga, Olonets, Kamchatka, Smolensk, and Nikolsk. To the left of the Metropolitan of Novgorod are two Vice-Presidents of the Council, Father Lubeimov and Prof. Prince Eugene Trubetskoi (see page 395).

MULTITUDES IN THE PROCESSION OF THE PARISHES ON ST. NICHOLAS' DAY IN THE RED SQUARE IN MOSCOW, MAY, 1918

The Bolsheviks know that their aims can be realized only on the ruins of the faith. The day had purposely been declared by the government to be a work day, but thousands came walking under the banner of the cross to the sound of Easter hymns.

the chapel, sit the Patriarch, the Metropolitan, the Archbishops and Bishops, the lay vice-presidents, and the secretaries. In the center sits Tikhon, the Patriarch, President of the Sobor. At his right is the Metropolitan of Novgorod, and just behind him Argafangle, the Metropolitan of Yaroslav, who, by the way, is the Russian Honorary President of the Anglican and Eastern Orthodox Churches Union. At the Patriarch's left are the Metropolitan of Kharkov and the Metropolitan of Kherson, and behind Kharkov are the Metropolitan of the Caucasus and the Metropolitan of Vladimir. They are all wearing the white cowl to distinguish them from the archbishops and bishops.

Opposite, facing the prelates, sit the other members of the Council. Speeches are made, not from the floor, but from a rostrum, on the left-hand side of the hall, facing the Assembly. The Council Chamber itself is on the second floor of the building.

The entrance hall below is the lobby of the Council, where members walk and talk together, often arm in arm, in animated discussion, and where laymen pause reverently to receive the blessing of Patriarch or Metropolitan.

Some of the bishops wear the Cross of St. George for valor on the field. In receiving the blessing a Russian opens his hands and puts them together and the prelate lays his hand in the open hands to be kissed after the blessing.

THE SANEST AND MOST DEMOCRATIC ASSEMBLAGE IN RUSSIA

The Patriarch, accompanied by a single footman, drives daily to the Sobor from his palace in an unpretentious carriage drawn by two black horses. He is often seen giving his blessing from the carriage window as he passes through the street, and there is generally a crowd of people pressing forward to receive his blessing at the door of the Council House.

The arrival of the Patriarch at the Sobor at 11 o'clock in the morning marks the opening of the session. The Assembly rises as he enters, "Many Years" is sung, and the House comes to order.

Although there are perhaps no conspicuously outstanding and dominant figures in the assembly, it reaches as a whole the highest level of the Russian mind. Here sit men from all districts. It is an all-Russian assembly. There are many strong personalities and many men marked by singularly beautiful and consecrated devotion to their task; nor is there evidence of a desire on the part of any one to dominate, least of all on the part of the Patriarch.

I heard no uncommonly stirring speech-makers, but a good deal of clear, cogent statement. It is because there is nothing noisy or spectacular about the Council that it evokes profound respect as the sanest and most democratic, as well as the most spiritual, body of men now assembled in Russia.

In contrast to the picture Titian has left us of the Council of Trent, all the sittings are open to the public. So republican is the Sobor in its character that visitors who happened to be present when these photographs were taken were requested not to leave the hall. I have had the advantage of knowing the Patriarch and many members of the Sobor and acquiring, in intimate relationships, a knowledge of their hopes for Russia.

The election of the Patriarch is the first act of constitutional Russia. It has a precedent in the history of the Russian Church. Although not foreseen by the canons, a similar example may be cited in the election of the Apostle Matthias, of which we read in the Acts. This manner of election answers to Russian ideals, and powerfully contributed to the joyful acknowledgment of the Most Holy Patriarch Tikhon as the person indicated by the will of God.

THE NEW PATRIARCH FORMERLY LIVED IN AMERICA

The man chosen to this high and responsible service is 54 years of age. In the world he was called Vasili Ivanovich Bellavin. He was born in the town of Toropetz, in the Government of Pskov, where his father was a priest. He was educated in the Church school of his native town, and later in the Ecclesiastical Academy of Petrograd. On leaving the Academy he was appointed master of dogmatic and moral theology in the Seminary of Pskov. In the capacity of teacher, he knew how to interest his pupils by his

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excellent method of instruction. In 1891, while carrying on this work, he became a monk. During the next year, 1892, he was named Inspector, and soon after Rector, of the Seminary of Kholm.

In 1897, on being consecrated Bishop, he was elevated to the See of Lyublin, and in 1898, it is interesting for Americans to recall, he was translated to the North American diocese. In America he won universal respect and took an active part in the organization of the Russian Church in North America. It was in his time that the Episcopal See was transferred from San Francisco to New York.

From America he was translated to Yaroslav in 1907. The people of Yaroslav fully appreciated the goodness of their Bishop and elected him an honorary citizen of the town. After his translation to the See of Vilna (also in 1907) Bishop Tikhon, in his generosity, made many gifts to various charitable institutions. He remained in Vilna until 1917, when he was called to Moscow.

Wherever in the Province of God he has exercised his episcopate, Bishop Tikhon has proved to be exceptional in his simplicity, wide benevolence, and purely Christian character. A gentle, strong, learned man, he has written little. He has been rather a practical church worker, an accessible leader.

He compares with the Patriarch Philip, murdered under John the Terrible, and with Cranmer in England. It is therefore a great consolation for the Russian Church that, in these hard years of the life of the people, such a prelate should have appeared at the head of the government of the Church.

THE PATRIARCH'S WAY CARPETED WITH GOLDEN FLOWERS

The consecration of the Patriarch in the Kremlin was the first free act of the Church there after the fierce artillery fire of the Bolsheviks upon the Holy Places.

At the door of the Chudov Monastery, on St. Alexis' day of this year, a little group of the faithful were waiting for the coming of the Patriarch to say the Liturgy. In place of the usual carpet spread for his entrance to a church, some one, just before he came, simply scattered dandelions in flower from the fields. In the sunlight the broken steps suddenly became paved with gold and malachite. A delighted smile touched the face of the Patriarch, and one seemed to see in his anxious eyes a belief that in these spring flowers in the midst of all Russia's woe grew the symbol of new life for the Holy Church.

When the question of the Patriarchate had been settled, the Council proceeded to organize a system of Church administration, ordering that periodical councils should be held in the future.

An important matter decided by the Sobor before its Easter adjournment was the reorganization of parishes. The Sobor restored to the parish much of the independence which it had enjoyed in ancient times, but which had been lost in the growth of bureaucratic centralization.

The Sobor was also obliged to provide answers to many social problems. The Sobor and the Patriarch addressed epistles to the clergy, the people, and the army, to strengthen their spirit against the growth of pernicious influences from without, poisoning the life of the nation.

The actions of the revolutionary government, directed against the position and rights of the Church, met with the Sobor's resistance. The latter body protested against the confiscation of the parish primary schools and the schools which prepared for the priesthood; against the abolition of Scripture study in all schools, and against the abolition of Church rights of property.

The measures just mentioned, as contrary to the proclaimed principle of separation of Church and State, were considered by the Sobor as being acts of tyranny against the Church.

However, it was the Patriarch, and not the Sobor, who played the most important part in the general movement for the defense of Church rights.

His fearless epistles, addressed to the people, explaining the true significance of the measures adopted against the Church by the present rulers of the country, call upon the people to defend their faith and excommunicate the authors of the persecution. The Sobor upheld the Patriarch's authority as a representative of the Church in its relations with the outside world.

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HIS HOLINESS TIKHON, PATRIARCH OF MOSCOW AND ALL RUSSIA

The new head of the Russian Church was at one time Bishop of the North American Diocese. It was in his time that the Episcopal See was transferred from San Francisco to New York. He was at the head of the Russian Church in this country from 1898 to 1907. A man of gentleness and strength, he focuses the forces of spiritual enlightenment in Russia.

THE PATRIARCH IN THE STREETS OF PETROGRAD, MAY, 1918

The Russian masses will never believe that the return to the Church means the revival of political and social oppression. They never confuse the eternal principles on which the Church rests with the passing political or social conditions.

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THE PATRIARCH IN SOLEMN PROCESSION, PRECEDED BY THE ARCHDEACON ROSOV, THE CHALIAPINE OF THE RUSSIAN CHURCH, AND ACCOMPANIED BY OTHER PRELATES

THE PATRIARCH ON HIS FIRST VISIT TO PETROGRAD ENTERING THE CATHEDRAL OF ST. ISAAC'S

Each new manifestation of popular feeling and of the faith of the people indicates the great spiritual change which is taking place at the present time in Russia

It was a source of inestimable comfort to the devoted that the people ardently responded to the Patriarch's call and by peaceful mass demonstrations of their religious sentiments largely succeeded in putting a stop to the open campaign started against the Church.

THE CHURCH PROBLEM IN THE UKRAINE

In connection with the Ukrainian separatist movement, a group of Ukrainian public men raised the question of the separation of the Church of the Ukraines from that of Russia. It was decided to summon a special Ukrainian Church Council. As Regional Councils are provided for by the organization of the Russian Church, the Moscow Sobor did not protest against the summoning of a Sobor at Kiev, and the Patriarch sent his representative to Kiev with a message of greeting.

While the civil war which broke out in Kiev interrupted the work of the Sobor, tendencies were disclosed of a more moderate character than those advocated by the supporters of a complete separation from the Russian Church.

In the midst of the trials besetting the Russian people, mainly through their own guilt, the Church proves its vitality. It is now reconstructing its outer forms, which had greatly deteriorated during the past from Orthodox Church order. But outward forms are not vital; inner life is of far greater import. That source of inner life never ran dry in the Russian Church, in spite of the numerous defects of its outward forms, for the deficiency of which it often compensated.

Let there be no misgiving; the Church has aided Russia in every crisis. The Church which even in the nineteenth century produced such shining lights as St. Seraphim of Sarov and Father John of Kronstadt, besides hosts of others, that Church is sure to foster and develop its inner life, now that better conditions of external organization are secured.

In the present moment of confusion in Russia the Church is the only institution which stands on its feet. May not the example of the Sobor well pave the way in due time for a similar triumphant reconstruction of the Russian body politic?

AN IMPORTANT NEW GUIDE FOR SHIPPING

Navassa Light, on a Barren Island in the West Indies, is the First Signal for the Panama Canal

By George R. Putnam

Commissioner of Lighthouses

LIGHTHOUSES and other sea marks are as necessary for the safety of traffic on the sea as are signal lights for the protection of railway travel.

It is interesting to note that there are waterways which are operated much like railways. Thus portions of the Detroit and St. Marys rivers, which carry the enormous traffic between the Lakes, have practically been double-tracked by dredging and marking separate channels for up-bound and down-bound vessels, and in some narrow parts of this passage a block-system has recently been introduced, so that by means of semaphore signals a vessel is prevented from passing until the preceding vessel has gone a safe distance. Similar systems are in use on important canals.

In normal times the shipping of the North Atlantic is operated on a double-track plan, with distinct lanes agreed upon for east-bound and west-bound vessels, and these lanes are for safety shifted to the southward during the iceberg season.

New York has a sort of four-track entrance from the sea, and of the four channels leading to the Narrows, the great Ambrose Channel is reserved for

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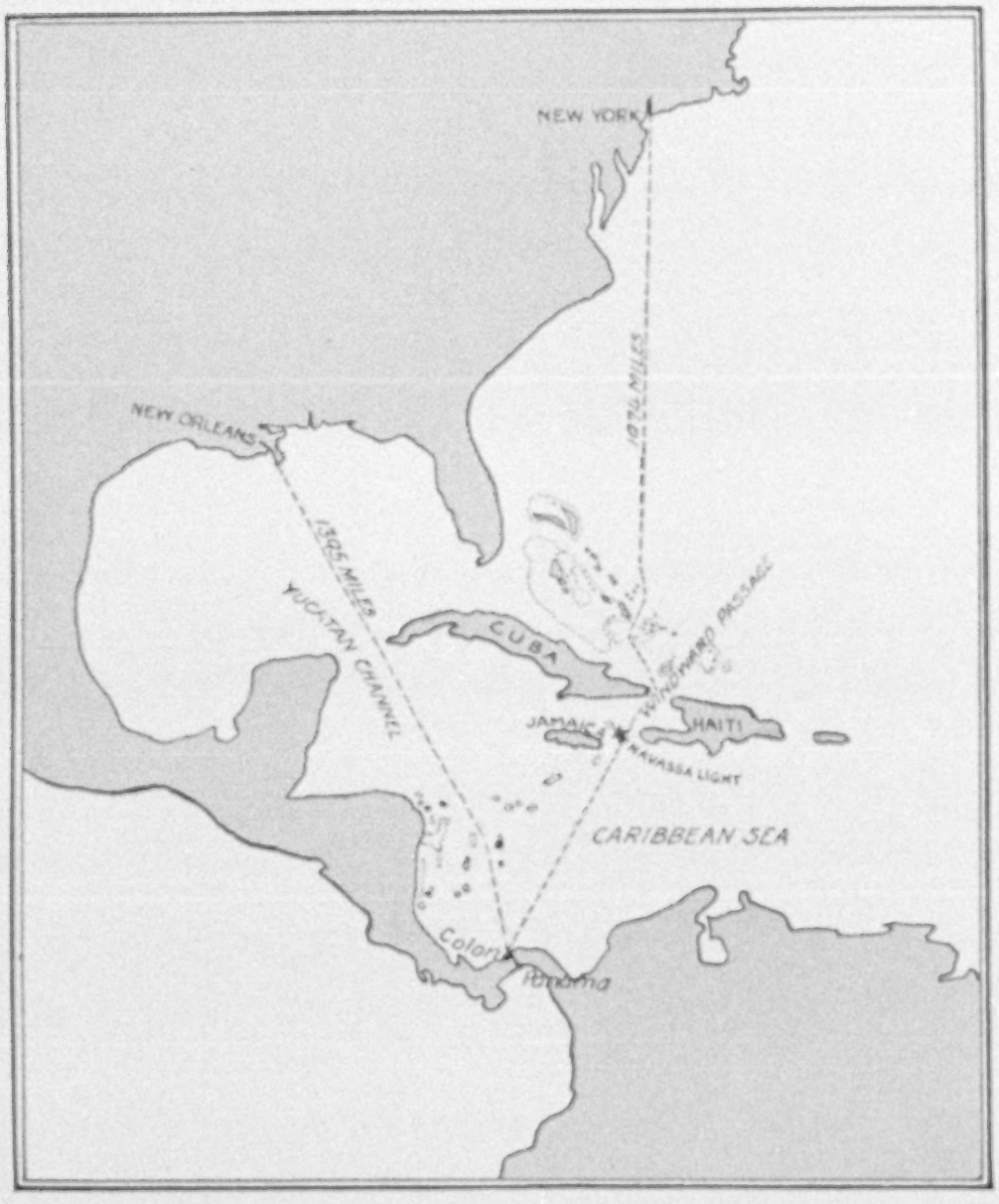


SKETCH MAP SHOWING THE LOCATION OF NAVASSA LIGHTHOUSE AND THE UNMARKED SHOALS OF THE CARIBBEAN

Coral reefs and islets above water are shown by solid line, submerged rocks and shoals by dotted line

express and high-class traffic, and sailing vessels and tows are not permitted to use it.

WHERE OCEAN TRAFFIC LINES CONVERGE

The great increase in the shipping interests of this country and the building of the Panama Canal have attracted attention to a large area which is poorly provided with safety signals for navigation. The Caribbean Sea, once known to fame mainly by the exploits of the early buccaneers, is now a region where ocean traffic converges from north, east, and south toward the Panama Canal.

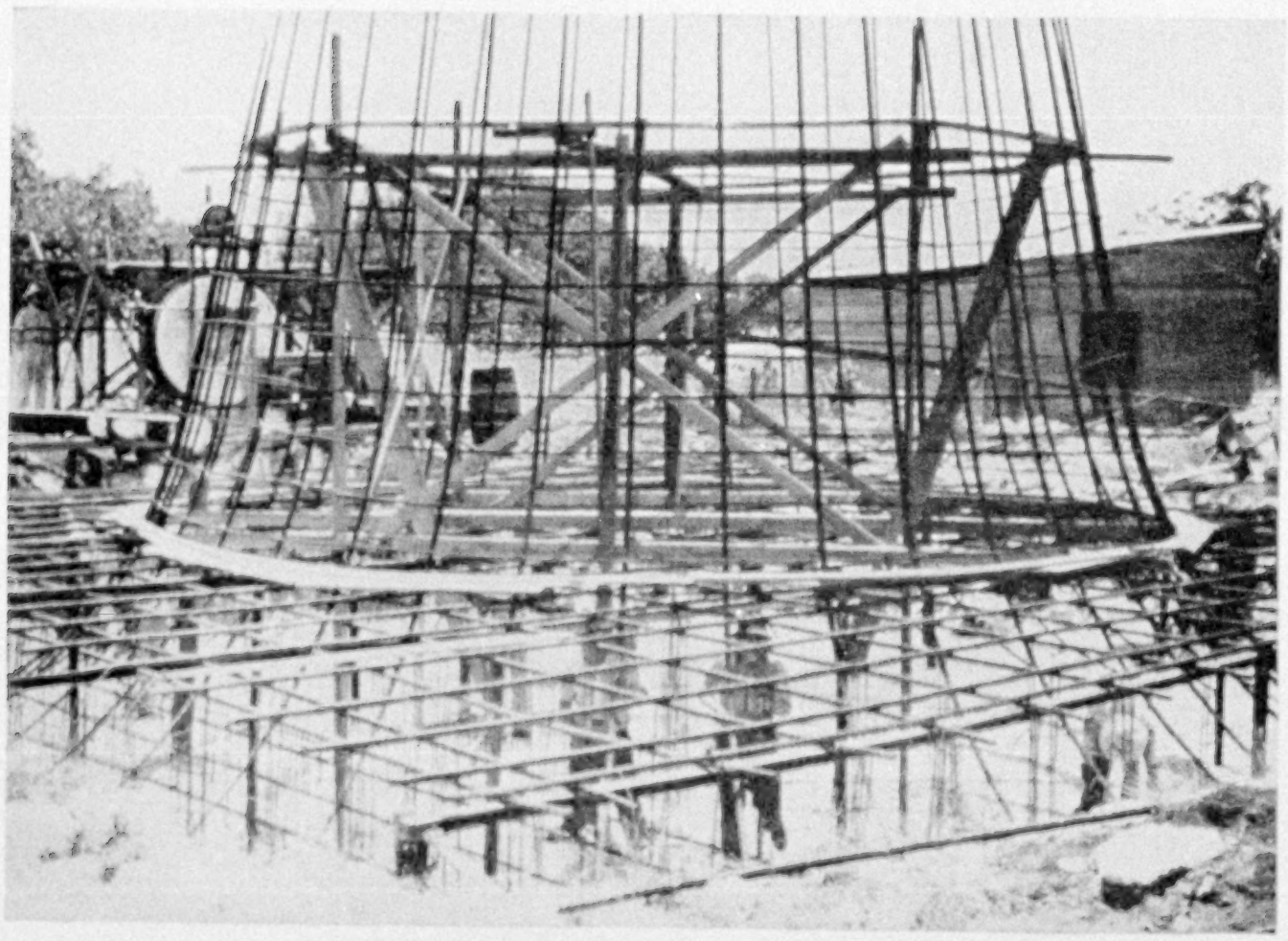
The northwestern part of this sea is strewn with rocks, coral reefs, and submerged dangers, unlighted and unmarked, a constant menace to shipping from New Orleans and the Gulf, which must pass through lanes between the reefs, and from New York and the North Atlantic coast, which must go close to several of these dangers.

On one of these dangers, Navassa Island, 600 miles north of Colon, the first signal for the Panama Canal has recently been placed. On this barren and uninhabited rock the United States Lighthouse Service has built a lighthouse of unusual type.

The main route to the canal from our Atlantic seaboard is between Cuba and Haiti, through the Windward Passage, and Navassa Island, lying between Haiti and Jamaica, marks the southern approach to this passage, and is the first landfall for vessels from Panama crossing the Caribbean Sea. The importance of its position with respect to shipping to and from the canal caused the United States to undertake the building of a light station of the first class on this inhospitable rock.

NEW LIGHT SWEEPS AN AREA AS LARGE AS DELAWARE

After many difficulties of construction, due to the inaccessibility and character of the island, on October 21, 1917, the light was first shown from the new concrete tower. Every night since then two beams of 47,000 candlepower have swept around the horizon each 30 seconds with clocklike regularity. Instead of a dark rock, which had loomed in the night in



Photograph by F. C. Hingsburg

THE BEGINNING OF THE CONSTRUCTION OF THE TALL LIGHTHOUSE, SHOWING THE STEEL REINFORCEMENT IN PLACE FOR THE FOUNDATION AND BASE OF THE TOWER

The steel skeleton, around which the concrete of the tower was poured, consists of 40 vertical steel bars, banded by a spiral of round steel bars, with loops one foot apart, wired to each vertical bar.

this passage, threatening mariners since the days of the early voyagers, these great rays now flash out friendly guidance to the seamen of all countries, regardless of nationality; the beams of this light have been seen 29 sea miles away, reaching nearly to the Haitian coast, and they sweep a sea area of about 2,200 square statute miles, as large as the State of Delaware.

Navassa light, on this rock in the center of one of the principal international sea passages and 500 miles from the American coast, is the most important lighthouse built by the United States in the last quarter century.

A TOWER TO WITHSTAND HURRICANES AND EARTHQUAKES

Navassa Island has the outline of an oyster shell and is slightly more than a mile in area. As the island rises fairly abruptly on all sides, forming a roughly flat tableland about 200 feet above the sea, it was necessary to build a tower 150 feet in height, in order that the light might "see over" the edge of the plateau and not be obscured to vessels in the vicinity of the island, unless close under the cliffs. The tower was placed on the highest part, bringing the light 395 feet above the sea.

The lighthouse tower was designed to withstand West India hurricanes as well as earthquakes, and the lower sections have massive proportions, the base being 25 feet in diameter, with walls over 6 feet thick. It is built of reinforced concrete, one of the tallest towers yet constructed by this method; it is of simple and dignified design, bell-shaped at the base, and above that a simple cylinder to

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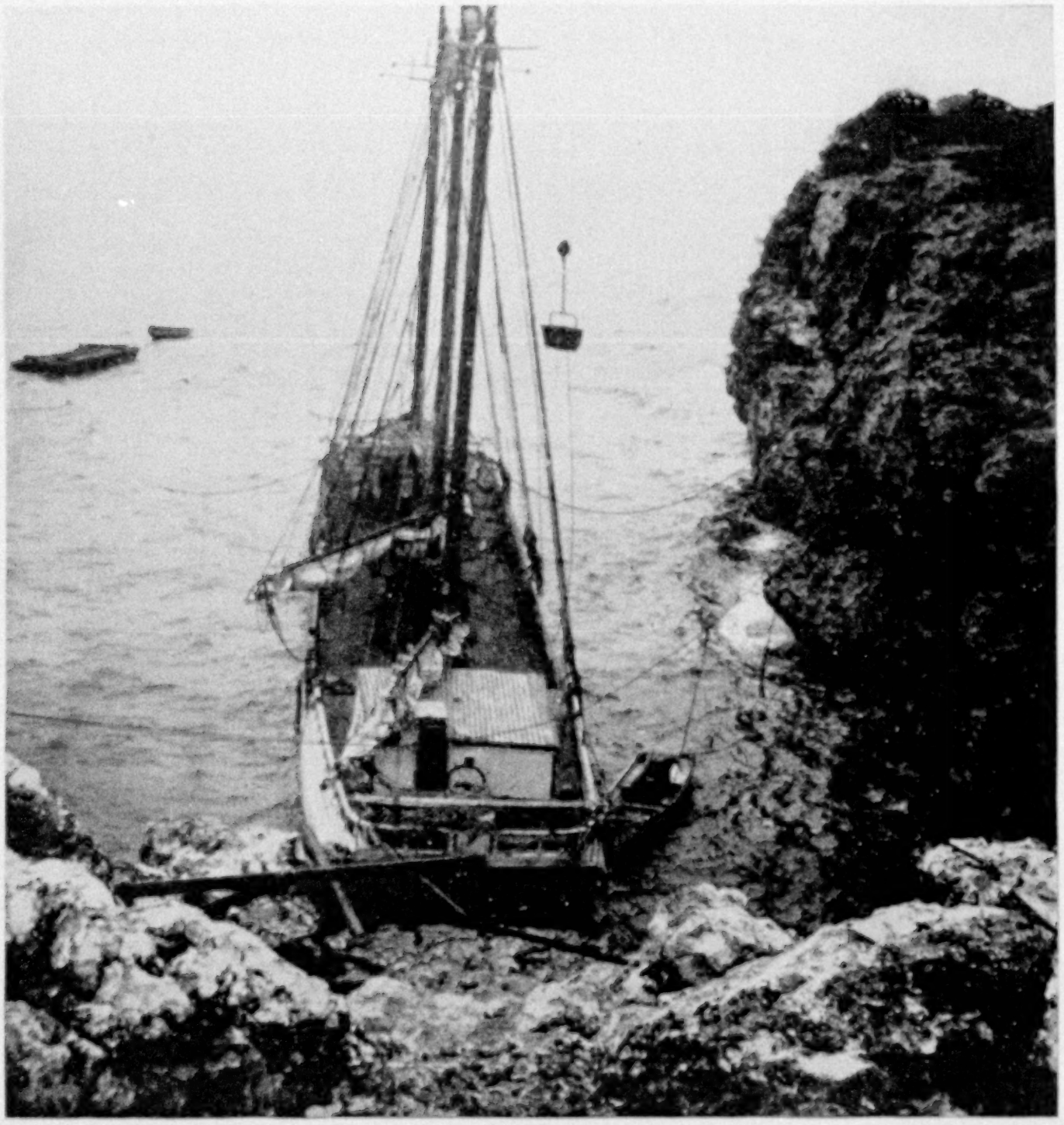


Photograph by Thomas Sampson

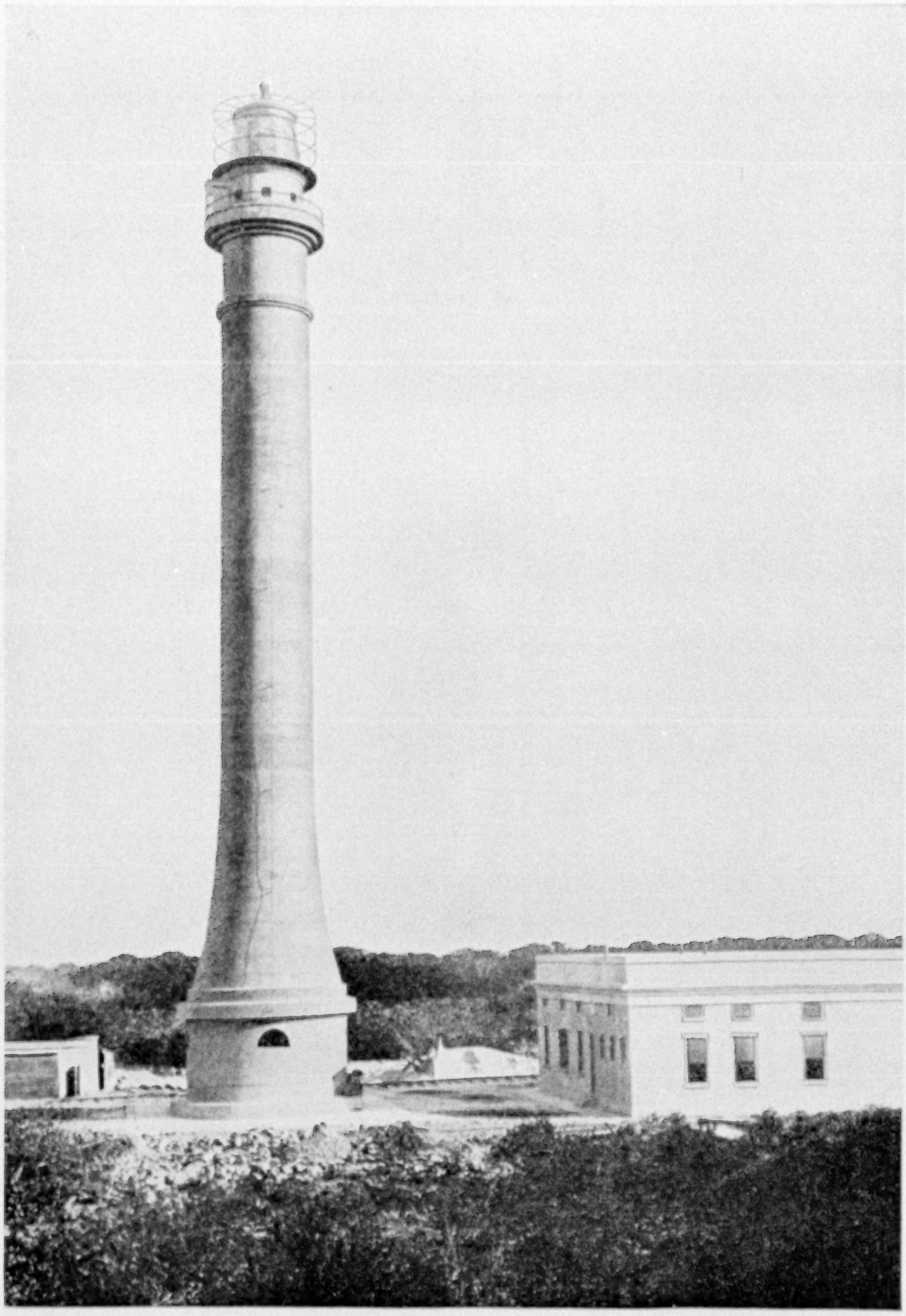
NAVASSA ISLAND LIGHT STATION, WEST INDIES: SCHOONER IN LULU BAY UNLOADING SAND

A little nook called Lulu Bay, with the schooner moored to the cliff; this is the only landing place available on Navassa Island. All the supplies and material for the lighthouse construction, as well as the workmen, were brought to the island by this little schooner, which was the only means of transportation for the year and nine months that the work was in progress.

the watch-room gallery. The use of this structural material has resulted in a much more slender outline than has been necessary in masonry lighthouses.

Almost everything required for this work had to be brought from a distance; the skilled employees were sent from the United States, together with all special supplies and equipment; the laborers came from Cuba and Jamaica, and it was even necessary to bring from Jamaica all the sand and most of the water used in construction.

The nearest ports were Guantanamo, Cuba, 90 miles, and Kingston, Jamaica, 110 miles distant. No good landing ex-



Photograph by F. C. Hingsburg

NAVASSA LIGHTHOUSE

Built by the United States Lighthouse Service, of reinforced concrete, on an uninhabited island in the West Indies. The concrete tower is 150 feet in height. The dwelling for the keepers is shown to the right.

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ists on the island, so that the little schooner that was used to bring supplies and men had to be moored under the rocky cliffs, when weather favored, and the cargo hoisted onto the shelf above; this small craft had narrow escapes from hurricanes, and there were many days when it was impossible to land.

On one occasion, after being damaged in a storm, the schooner with her load of supplies put back to Jamaica, and there was apprehension as to the food on Navassa, but this reassuring report was received: "The last flour was used for making bread on Friday. There were sufficient rations on hand to last through Sunday, and with goats, wild pigeons, fish, etc., together with a pig and a number of chickens which are kept here, we were in no serious predicament."

An unusual feature in lighthouse building, a radio equipment, much facilitated construction.

Men quickly tired of the monotonous life. On account of climate and difficulty of transportation, very little fresh food was available, and the workmen persistently grumbled. The excessive heat soon diminished their efficiency. The transportation of materials from the landing place to the site was a most burdensome task, as this had to be done largely by men shoving the loaded cars on the work railway.

ISLAND RESEMBLES A PETRIFIED SPONGE

Navassa is one of the strangest pieces of territory owned by the United States. It is a remarkable formation of volcanic limestone, completely riddled with holes and pockets, some of great depth and having no visible bottom. These holes are so numerous that one can walk only with great difficulty.

There is a total absence of water, and no watercourses or lakes, as rain is immediately absorbed by the cavities. The whole island has the appearance of a great petrified sponge. There is a growth of stunted trees and underbrush on the high plateau, and the island has some animal life, wild goats and wild cats, doubtless descended from those brought here when the island was occupied, and numerous seabirds and land-crabs.

UNITED STATES' TITLE TO ISLAND RESTS ON MURDER-TRIAL DECISION

It is a curious fact that the title of the United States to Navassa Island rests on the decision in a murder trial. Although uninhabited and long abandoned at the time the lighthouse work was undertaken, Navassa was for some years actively occupied. The pockets and surface of the island contained a large deposit of a phosphate earth and guano.

Under the guano act of 1856, one Peter Duncan presented a memorial to the Secretary of State stating "that on the first day of July, in the year of 1857, he did discover a deposit of guano on an island or key in the Caribbean Sea not occupied by the citizens of any other government, and that he did take peaceable possession of and occupy said island or key of Navassa in the name of the United States." These deposits were worked by a company for a number of years, up to 1898, and the ruins indicate an elaborate plant for this purpose.

In 1889 about 150 men were employed on the island, and on September 14 of that year a riot occurred, in which the superintendent and several of his assistants were killed. The frigate *Kearsarge* took the murderers off the island and they were tried in Baltimore.

The defense set up the plea that the island was not an American possession and that the court had no jurisdiction, but the Supreme Court denied this plea and the murderers were executed.

A concrete dwelling, in the Spanish tyle, with a large open patio in the center, furnishes comfortable quarters for the families of the three keepers who carefully watch this, one of the loneliest of the sea signals of this country. They see many a passing ship, but can expect supplies and mail only when the supply steamer visits the island, a few times a year.

The matter of marking other dangerous reefs of the Caribbean Sea for the protection of the increased shipping is now receiving special consideration.

COAL—ALLY OF AMERICAN INDUSTRY

Following the Nation's Annual Output of 735,000,000 Tons of Fuel from Prehistoric Ages to Its Arrival at Tidewater

By William Joseph Showalter

ONE who has not wandered through the seemingly endless reaches of the innumerable man-made caverns of the coal regions, and there studied first hand the tremendous industry of harvesting the solidified sunbeams planted for humanity by a bounteous Providence in the Carboniferous Age, cannot appreciate the vastness of that industry nor its meaning to the American people.

To see them gathered at the rate of more than two million tons a day, transported hundreds of miles, and then, under the alchemy of science, transmuted into a thousand forms—heat for the fireside, light for the darkness, motion for the railroad train, power for the factory, fertility for the soil—is an illuminating lesson, showing how man, the creature of Nature, through science makes her wonderful forces his servants.

Under his touch coal becomes comfort in the home or death at the battle front; yields a corrosive acid that burns like fire or a sweetness that makes sugar seem insipid; gives off a gas that smells like a bad egg, but is as harmless as a chicken; is transformed into colors that make the rainbow envious of their brightness and variety, and into explosives that make the thunderbolt jealous of their power.

THE MAGNITUDE OF AMERICA'S COAL NEEDS

The first thing that impresses one who studies the coal situation in America is the well-nigh inconceivable proportions of the nation's demands for fuel. The government estimates that the requirements for the current year will reach the enormous total of 735,000,000 tons.

So huge is this figure that it were almost as futile to use tons as units as to measure the distance around the earth in inches. Even the number of carloads mounts so far up into the millions that they become meaningless, and trainloads are only a little better.

About the only way in which one can visualize this demand is to build a mental bin capable of holding enough to meet the national need. If this bin be made with each of its four sides measuring a thousand feet, it will have to be more than thirty-three thousand feet high—overtopping Mount Everest, the tallest mountain in the world, by nearly a mile. Or, if the fuel were put into a coal pile of normal slope, with a base of twenty feet, that pile would have to be 96,000 miles long—nearly four times around the earth.

Little less startling than the size of the national demand for coal are the proportions of the excess requirements of war times over peace times. Taking the average annual demands of peace times and comparing them with the demands of the past year of war, one finds that the extra coal required in the United States as the result of the war reached a total of 210,000,000 tons.

Here again the brain reels in its effort to comprehend the meaning of such vast figures. They mean an excess tonnage amounting to 4,333,000 carloads. These cars would require a string of engines nearly a thousand miles long to pull them and would form a train which, moving at a uniform speed of twenty miles an hour and never stopping, would require seventy-five days to pass a given crossing.

ARMY OF MINERS NOT GREATLY REINFORCED

And yet the force of miners upon which devolved the task of meeting this almost unbelievable increase in the na-

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Photograph by J. Horgan, Jr.

BENEATH THESE BARE ROCKS LIE THE SOLIDIFIED SUNBEAMS STORED BY PROVIDENT NATURE FOR RESOURCEFUL MAN

It is only during a few centuries that coal has been used to any extent, although Roman mines in England point to its use in those times. William Penn paid $2,500 for the anthracite region. Coal already taken out has had a tidewater value of seven billion dollars, and there are five tons in place for every one thus far removed. Ninety-eight years ago the total shipments from this region were only 365 tons. Now the production is 90,000,000 tons per year.

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tion's requirements was very little, if any, larger than in peace times. Tens of thousands of miners had left the coal fields for the factories or for the battle front, and with all the high wages paid, it was next to impossible to maintain the army of anthracite and bituminous workers at peace-time strength.

Let us go into the coal region and down into the mines and see the sturdy harvesters reaping the grain of heat that Nature stored up against the day when the forest should find itself unable to supply mankind with fuel.

THE ANTHRACITE FIELDS

We will first visit the anthracite fields, that wonderful region in Pennsylvania which lies to the north of Reading, to the south of Carbondale, east of the Susquehanna and west of the Lehigh rivers. Scranton and Wilkes-Barre are the center of the upper field, Hazleton of the middle field, and Pottsville of the lower.

Were all of the coal beds in this remarkable region laid out in a compact body, they would cover an area only twenty-two miles square. Yet out of such a small area have come billions of tons of coal and culm, the former to cheer a million firesides, and the latter to dot every landscape, and to serve as monuments to remind us of the patient toil of hundreds of thousands of men through scores of years.

A visit to a modern colliery is an impressive experience. Depending on its size and the labor available, it will bring from one to two full trainloads of coal up out of the bowels of the earth every day, put the coal through the breaker, where the sheep of fuel are separated from the goats of slate and culm, and load it into the cars ready for market.

We shall be safe even if we do go down a thousand feet into the earth and roam about in an underground plantation whose area may be judged by the fact that there are eighty-five miles of railroad track in it. The colliery superintendent, a rare old Welshman who has been mining coal for twenty years, and the district engineer, a fine youngster who has had his engineer degree from Lehigh, will accompany us.

There are some things on top of the ground that will be even more interesting to us when we go below—particularly the hoisting engine and the ventilating fan, for without the one we would not be able to ride back to daylight, and without the other we would stand a chance of being "gassed" over here in peaceful America.

HOW A MINE BREATHES

The giant fans fly around with a rim speed of a mile a minute, two of them, with a third in reserve for emergencies. If it were not for those fans the air in the mine would become so laden with gas and dust that if it did not explode and transform the whole mine into a charnel-house, it would develop choke-damp and suffocate us. These fans are to the mine what the involuntary muscles of the chest are to the lungs—they make it breathe.

Every mine has two shafts—the hoisting shaft and the air shaft. In order to keep the air in the mine free enough from gas to permit miners to work in safety, enormous quantities of fresh air must be sent down the one shaft and corresponding quantities, gas-laden, drawn out of the other.

In America this is usually accomplished by exhaust fans drawing the used air up the air shaft. This type of fan tends to make a vacuum at the top of the shaft, and the weight of the atmosphere drives the fresh air down the hoisting shaft and the stale air up the other.

If that which goes down the hoisting shaft were allowed to take its natural course, it would make a bee-line for the air shaft and rush up into the fan-created vacuum at the top. That would leave the foul air in every other part of the mine and accomplish no great good.

So, means have been found to lead air around a mine just as effectively as one might lead a horse. By the use of doors and curtains and bridges, the mining superintendent is able to take the current of air that rushes down the hoisting shaft and make it move here and there, hither and yon, into every nook and cranny of the mine, driving the foul air before it as it goes. It seeks out every gas pocket and forces itself into every chamber.

It may very well be imagined that a mine with enough tunneling to call for 85 miles of railroad track needs a great deal of air, and that this air, to reach

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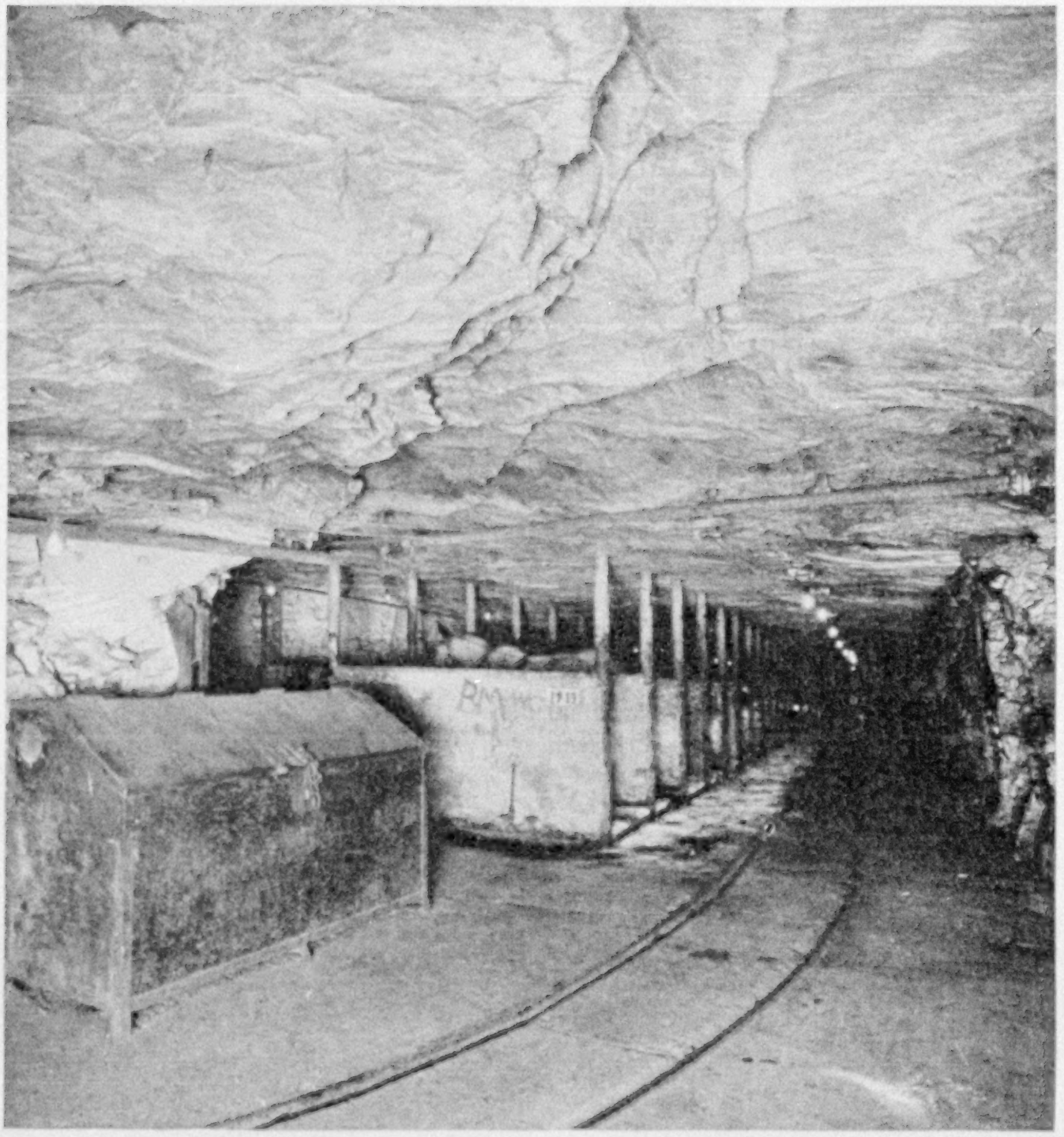

THE MULE STABLES IN A COAL MINE

Often down a quarter of a mile in the earth are stables kept as clean and as sanitary as a race-horse barn. The mule is brought down the shaft in the cage, or elevator, blindfolded, and he stays down below until he dies, or is rendered "hors de combat" by accident. If he is sick there is a "barnyard" covered with white sand—the only touch of white to be seen—where he can roll and rest to his heart's content.

every part, must cross its own path many times, just as a man, covering all four sides of every block in a city, would have to cross his own tracks. In the mines this is accomplished like a railroad crossing by bridge instead of at grade. When a crossing point is reached, there is a tunnel opened up through the solid rock above the roof of the mine, and through this the air rushes at right angles to its former direction.

To get the air properly distributed, it is necessary to make splits, so that the current can be divided and sent into different sections of the mine. These air splits are doors which permit only half of the air coming their way to pass. The remainder must find some other way through.

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Photograph from U. S. Bureau of Mines

LINING A MINE WALL WITH ARTIFICIAL ROCK

One of the frequent causes of mine cave-ins is the weathering of the slate of the roof and side walls. It gradually crumbles or scales off and suffers a consequent weakening, which may finally bring disaster. The cement gun covers the slate with a thin plaster, which effectually shuts out the air and leaves it as unexposed to deterioration as it was during the countless ages before the coal was removed.

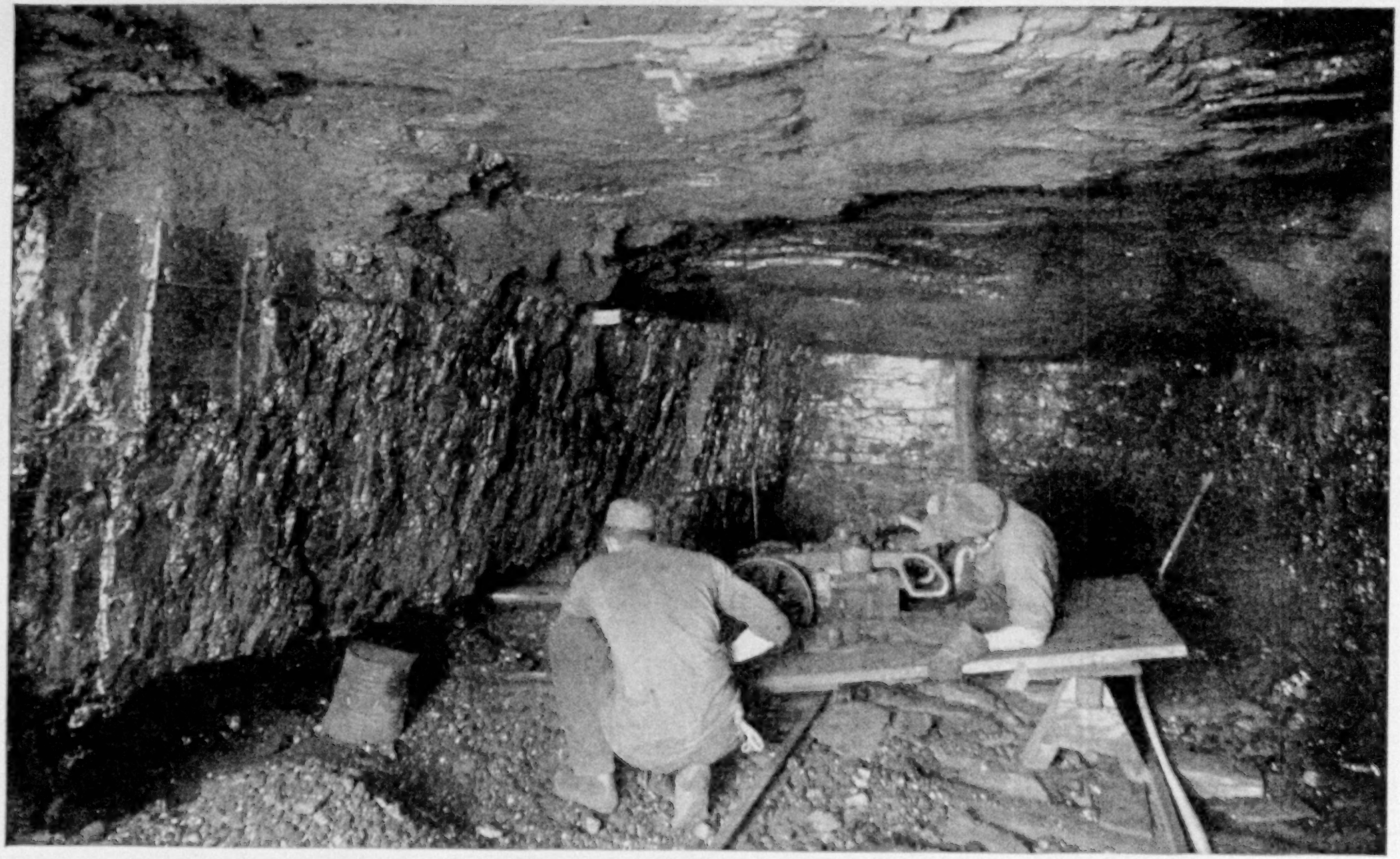
Before going down into the mine the superintendent will give us each a miner's lamp—at this particular mine the lamp is a tiny teapot affair containing sperm oil and with a spout full of cotton yarn. Also, he will equip us with electric hand-lamps, to be used in any emergency. Then he will stick an extra ball of yarn in his pocket and we will start for the "cage," which is the mine name for an elevator.

THE DESCENT INTO ANTHRACITE

We step on, he presses a button, and the hoisting engineer is notified that we are ready to go down. Suddenly the cage seems to drop; then it seems to stop, and the walls of the shaft appear fairly to fly upward past us. Up, up, up they fly, disclosing this stratum of rock and then that.

Arriving at the bottom, we soon find that a coal mine is planned like a city. There is one main street, or entry, and it has been laid out with the nicety of a grand boulevard. Parallel with this are other entries, and across these entries run other streets, at right angles, usually, which are called headings. Lining all these headings as houses line the streets are the chambers, or rooms, in which the miners work.

When we stop at the bottom we feel ourselves in a small-sized hurricane. It is the air rushing down the shaft and starting through the mine on its mission of purification. Setting out down the main entry, along a railroad track, we soon hear a clanging bell and a whistle, and presently there looms out of the darkness a yellow light. As it approaches, we see the outlines of what appears to be a



Photograph from U. S. Bureau of Mines

UNDERCUTTING A BREAST OF COAL WITH A COMPRESSED-AIR PUNCHER

There are many types of cutting machines for overcoming the wasteful methods of "shooting from the solid" or blasting the coal loose without cutting around it first. Some are driven by compressed air, some by electricity, some by steam generated on top of the ground. One cave-cutter is not unlike a mowing machine. A cutter-bar reaches out from the driving mechanism and has, instead of pitman-operated sickles, an endless chain revolving around sprocket wheels. On this chain coal knives or picks are fastened, and as they travel along they cut away the coal. When a cut, such as the one being made in the illustration, is finished from one side of the chamber to the other, holes are drilled and light blasts put in. When fired, these blasts cause a great block of coal to break loose and fall to the floor, where it is broken up and loaded into cars.

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long, round boiler creeping along the rails; but in reality it is a compressed-air engine—for compressed air, rather than electricity, is the haulage power in this mine.

Upon the surface there is a great air pump that keeps crowding the molecules of air together closer and closer until they push away from one another with the strength of a thousand pounds to the square inch. Think of thin, invisible, imperceptible air being packed so tight that it tries to burst out again with a strength that would make a Samson seem a weakling! Put a cubic foot of this air into a cask and the pressure on the sides would be 432 tons.

KEEPING TAB ON THE MEN IN THE MINE

When the miners go down to their work in the morning they are checked in by the "fire boss." He is a foreman who has charge of fire prevention and of the safety of the miners while at their several tasks. During the night every section of the mine has been inspected to see whether there is gas anywhere. If there should be an entry, a heading, or a room that is laden with gas, the fact is noted on a slate which is exhibited to the men as they file past. If there is no gas, it is said that the day starts with a clean slate, which is both figuratively and literally true.

The brass check of every miner who enters the workings is taken and hung up on a board, opposite the number of the room in which he is digging coal. If he has a helper, his check—somewhat different—goes up too; and if there are two men working as partners, that fact is shown on the board also.

By this careful checking system the location of every miner and every helper in the mine is known all the time, and in case of explosions, fires, or falling walls the management always knows who is in and who is out.

We walk and walk until we begin to feel as though we might be coming out over in China or France, and then we come to the rooms or chambers—for all the coal in the neighborhood of the hoisting shaft has gone up in heat and smoke long before now and this mine is far-flung.

These rooms or chambers might be monks' cells in some catacombs for the living. Here the miner bores and blasts and digs away the coal and loads it into the mine cars. If he has a helper he does not need to do the loading himself, but in these latter days helpers are not much in evidence. The car holds about 6,000 pounds of run-of-the-mine coal, and a miner is supposed to fill two of them a day.

When the car is loaded the miner puts his number on it, and presently, with much ado, there comes up the heading and into the passageway leading to the chamber a string of mules walking tandem, or single file, and dragging an empty car behind. They pull out the loaded car, set the empty one where the miner wants it, and go back the way they came, with the load of coal.

There are other strings of mules, also, and they distribute the empties and mobilize the loaded cars from and at given points. Then the compressed-air engine comes along and makes up a train of loaded cars after dropping one of empties ready for distribution. The coal trains are pulled down to the hoisting shaft, and one by one the cars go to the surface, an empty coming down as a loaded one goes up.

THE DANGERS A MINER FACES

The dangers the miners have to encounter are many. Their work is individualistic and solitary. Who knows whether they are careful in handling their explosives? Who knows whether they keep a proper watch for signs of gas? And yet one careless miner in one little chamber may start a conflagration that will sweep the mine and make scores of victims. He may disdain to screw off the cap of his powder can and pour out the powder in a safe, orderly way, preferring to cut a jagged hole in the top of the can with his pick and to pour out the powder through it. He may disdain to tamp his charge home with clay and may use a lot of paper and coal dust instead. All that goes very well until there is fire-damp present, and then—and then the world may read, in newspaper headlines across the page, of a terrible disaster.

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Photograph by J. Horgan, Jr.

A JACKHAMMER DRILL AT WORK, DRIVEN BY COMPRESSED AIR

With one of these machines a miner can drill as many holes in one hour as he could in eighteen with the old-fashioned hand drill

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Photograph from U. S. Bureau of Mines

TAMPING HOME THE BLAST

Having drilled his holes in the "breast" of coal in his "chamber," the miner is now ready to blast down several mine-car loads. It is back in these places that the mine fires so often begin. One miner, careless and indifferent, may undermine every precaution and safeguard that can be taken and provided by the company and all the other miners together. And the pity is that often familiarity with gas and powder and fire breed contempt for their dangers, with the resultant horrors of a mine disaster (see page 413).

Photograph by J. Horgan, Jr.

ELECTRIC MECHANICAL LOADER

Once every operation between the unmined coal in the seam to the loaded mine car was done by hand. But the mechanical age has dawned even in the depths of the earth, and with jack-hammer drills, coal-cutting machines, and mechanical loaders the individual output of the average miner is increasing. Mining machinery is in the harvest fields of heat what the self-binder is in the gathering of grain

THE THREE DEADLY MINE GASES

The three principal gases encountered in mines are choke-damp, or carbonic acid gas; fire-damp, or marsh gas; and after-damp, or carbonic oxide gas. Choke-damp is heavier than air and settles in the lower parts of a mine, just as water seeks the lowest level. It kills by suffocation. It may be dipped up with a bucket like water, and its presence may be detected by lowering a light into the cavity where it exists, as it will put out the flame immediately. Individual miners are killed by it, but it never explodes.

Fire-damp is a most peculiar gas. If you mix less than 85 per cent of air with it or more than 95 per cent of air, it will burn but will not explode; but if it be mixed in the proportion of 88 or 89 parts air to 11 or 12 of fire-damp, the combination becomes one of the most terrible of explosives.

Photograph from U. S. Bureau of Mines

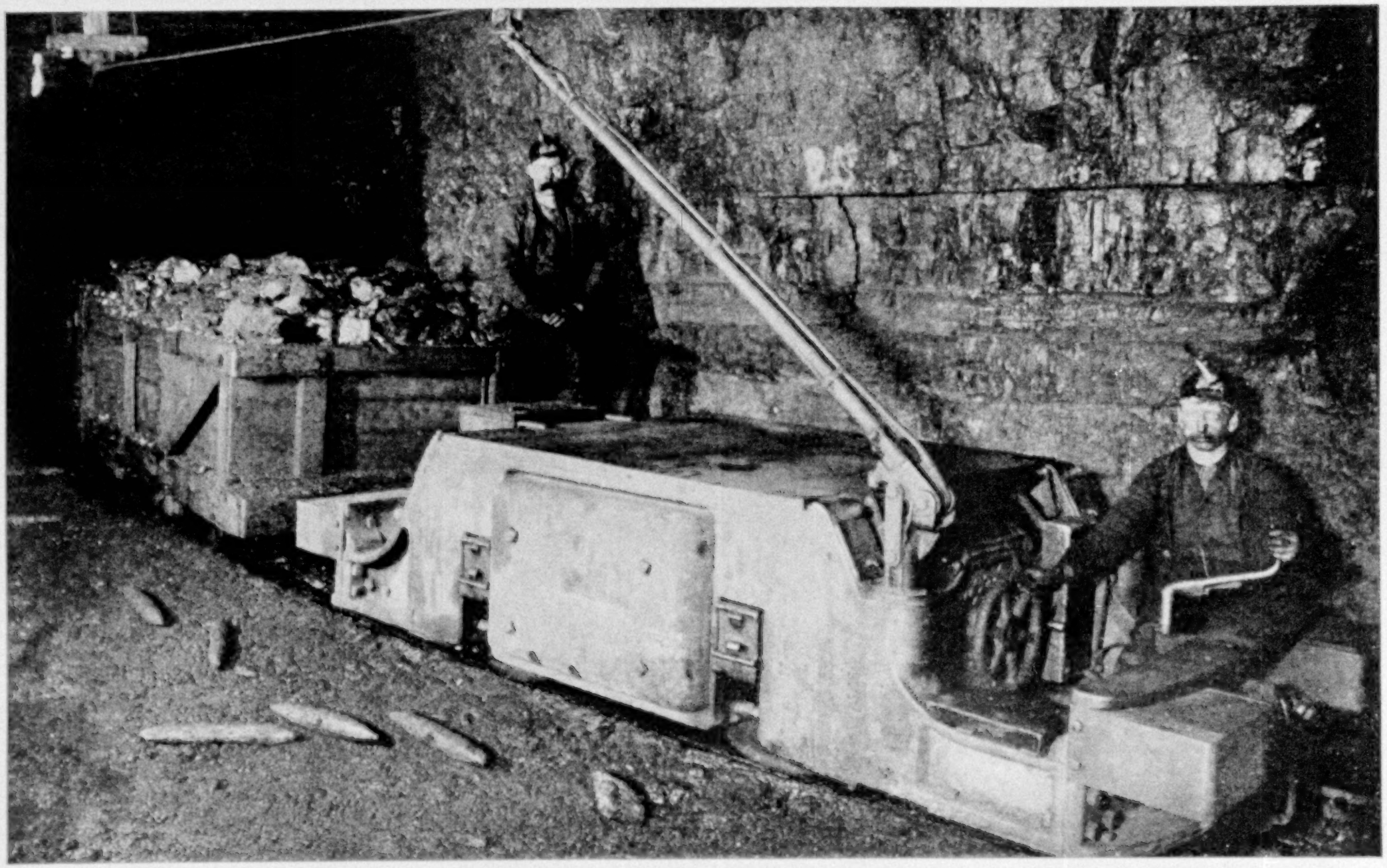
HOW NOT TO PREPARE A BLAST

This miner, pouring powder out of a jagged, pick-cut hole in his can, while his cap lamp burns brightly, is not only taking a chance with his own life, but with that of every other miner in the workings. This is a picture of what the miner should not do. But thousands of lives have been sacrificed by just such methods.

Eternal watchfulness is the price of safety. When the coal is blasted down, fire-damp pockets are often opened up, and the thin, trickling, hissing sound tells the miner what has occurred. Miners test the chambers, headings, and entries for fire-damp with a lamp. If the blaze becomes elongated and blue at the base, that gas is present.

An explosion of fire-damp is one of the most terrible disasters that can occur in a mine. In an instant the dark, man-made caverns are lighted up from end to end by a lightning that beggars description. "The expanded gas drives before it a roaring whirlwind of blazing air," as one who has survived the catastrophe tells us, "which tears up everything in its progress, burning many a miner's body to cinders, entombing others, and, rushing to the shaft, it wastes its fury in the shower of dust and stones and timbers it blows high into the air."

A tragic story might be written of mine disasters which fire-damp has caused and of the tens of thousands of miners who have given up their lives in such holo-



Photograph by J. Horgan, Jr.

AN ELECTRIC LOCOMOTIVE MOVING A MINE TRAIN

Many a mine mule has hee-hawed with delight as his life sentence to hard labor in an underground prison has been commuted by the arrival of electric transportation. The sharp-nosed sticks in the foreground are "sprags" to be stuck between the spokes of the car wheels to brake or "scotch" them. They have left their imprint upon the vernacular of the coal region, since to "sprag" a scheme is effectually to block it.

causts; but as the years go by greater care is used, better ventilation is maintained, and the disasters, happily, are growing fewer.

After-damp is one of the deadliest of all gases encountered in mines, but fortunately it does not occur except following fires. It is so subtle that the miner is powerless to escape its attack when he realizes its presence. Odorless, or possessed of a mere hint of violet, its victims experience an exhilaration at its onset that seems to them only a sensation of feeling unusually well; but so quick and deadly are its effects that before this feeling passes, the victim is wholly within its grasp.

HAND METHODS PRODUCE ANTHRACITE

In the anthracite region mining is still done principally by hand. Some jack-hammer drills have been introduced and some electric coal-cutting machines; but hand methods still produce most of the anthracite. The jack-hammer drill is an instrument which bores the blast-holes by power. With one of these drills a miner is enabled to bore as many holes in one hour as he can bore in eighteen with a hand-drill. Among the illustrations of this article (see pages 414 and 416) will be found pictures of cutting machines, jack-hammer drills, mechanical shovelers, etc.—labor-saving machinery that is now working wonders in the productive powers of the miners.

If space permitted we would follow our fine old Welsh guide up into the "kidney" of the mine and see a second layout of entries, headings, and chambers in a half-way station seam; we would contrast the new steel timbering of the mines with the old wood timbers coming from the South; we would stop to look at the mule stables, as clean and as sanitary as any stables you ever saw, with a sand-floored yard, where the sick ones may roll and rest to their hearts' content.

But let us follow the coal up the shaft, and through the breaker in the case of anthracite, and through the tipple or dumping house in the case of bituminous.

When we reach the top again, we note the layout of the breaker plant, where the coal is cleaned and sorted into the several commercial sizes. The first thing that impresses us is that the mine-owners are almost as careful in saving coal as a miser is in hoarding his gold.

The loaded mine cars are rolled off the cage by hand, and the breaker building is so situated that the cars run down to it by gravity. As the cars roll down to the breaker hoist, which may be either a vertical lift or an inclined plane, boys "sprag" or "scotch" them and let them down to the hoist one by one.

Going up to the top of the breaker, we see the coal as it comes from the mine, with all its slate and culm, mechanically dumped, a carload at a time, upon the oscillating bars, which begin the process of separating the coal from the worthless material and the assorting of the former into groups according to size.

There are eight different sizes of coal now in general use—broken, egg, stove, and chestnut, which are the domestic sizes, and pea, buckwheat, rice, and barley, which are steaming coals. They range from four inches in diameter for broken to one-sixteenth of an inch for barley. Of course, there are as many pockets at the railroad tracks as there are grades of coal produced in a breaker, and as many chutes into the cars as are necessary to load every grade simultaneously.

After the "bony" coal passes through the crushers and is broken up, it joins the procession of unseparated slate and coal down the several chutes. At one place it runs through a centrifugal slate picker, which is a striking contrivance that does the work of a jig in another type of breaker.

There are dry breakers and wet ones, but this has no reference to the presence or absence of prohibition. Dry breakers are those where the coal comes from the mine fairly clean and goes through the breaker without being watered, either for the suppression of dust or for the washing of the coal.

Also, there are breakers which separate the slate and culm from the coal by jigs rather than by centrifugal pickers. In these the coal as it comes from the mine is "jigged" up and down in water. The coal settles more slowly than the slate and culm and can therefore be skimmed off like cream from milk.

In order that the miners may not be

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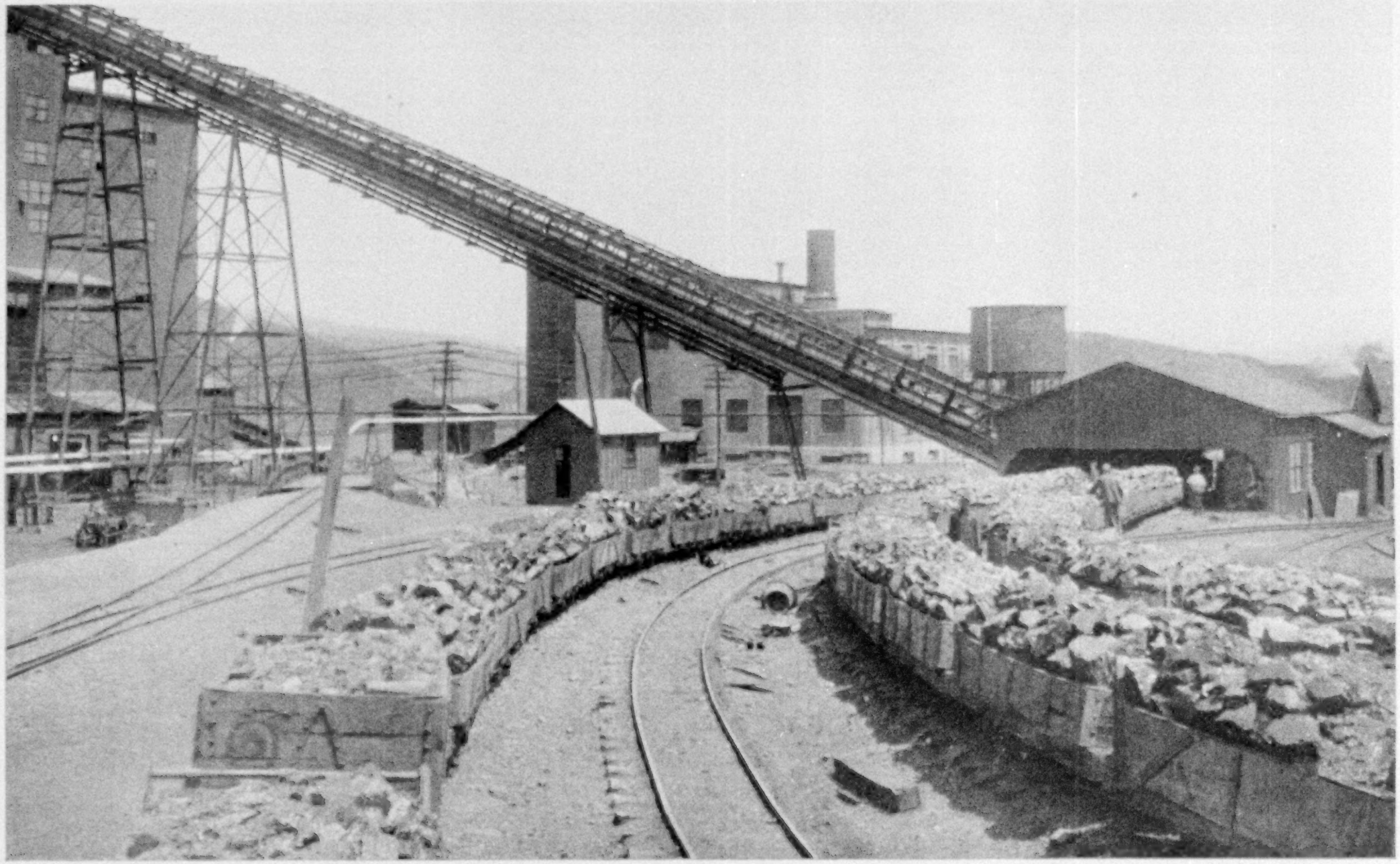

Photograph by J. Horgan, Jr.

THE INCLINED-PLANE ELEVATOR OF AN ANTHRACITE BREAKER

When the loaded cars are brought out of the mine they drift by gravity to an inclined plane. There a "barney," attached to a cable, pushes them to the top of the breaker where the coal is dumped. Then the cable is reversed and the barney acts as a brake in returning the cars to the bottom of the incline.

Photograph by J. Horgan, Jr.

ONE OF THE LARGEST COAL BREAKERS IN THE WORLD: KINGSTON, PA.

The coal comes in at the rear of the breaker, on the top-story level. It wanders this way and that, first down this story and then the next, finally reaching the bottom minus its slate and dirt and separated into every size, from "broken" to "buckwheat."

tempted to load too great a proportion of slate, there is a "court-house" at every breaker. The men are normally allowed 7 per cent for slate, but sometimes, when in a hurry to get a car loaded, they throw in a larger proportion of refuse.

But they never know when one of their cars is going into the "court-house." This is a side track where an inspector examines the coal to see whether it is running to the proper percentages or not. If he finds that the miner has loaded too much slate, the latter is asked to take a day off. Two or three offenses result in a discharge.

HANDLING BITUMINOUS COAL

Handling bituminous coal after it leaves the mine is a much simpler process. Often it is sold as run-of-the-mine, in which case the mine cars are simply run up to the top of a building called the tipple, tipped over, and their contents dumped into a chute that leads to the railroad cars on the track below.

If it is not shipped as run-of-the-mine, it is graded over a series of bar screens into lump, nut, and slack, each grade going into its own pocket ready to fall by gravity into the railroad car. Some of the bituminous tipples are large and elaborate affairs, capable of separating many thousands of tons of coal a day and loading it ready for shipment.

Were space at hand, one might tell of the great culm banks that are being made to give up their coal; of the coal being dredged out of the rivers of the anthracite region, which was deposited there through decades of freshets and floods; of the superstitions of the miners, as, for instance, the dread of the white mule, which is harmless if the miner detects its ghostly approach, but certain to inflict a mortal bite if it is able to steal up unobserved.

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Photograph by J. Horgan, Jr.

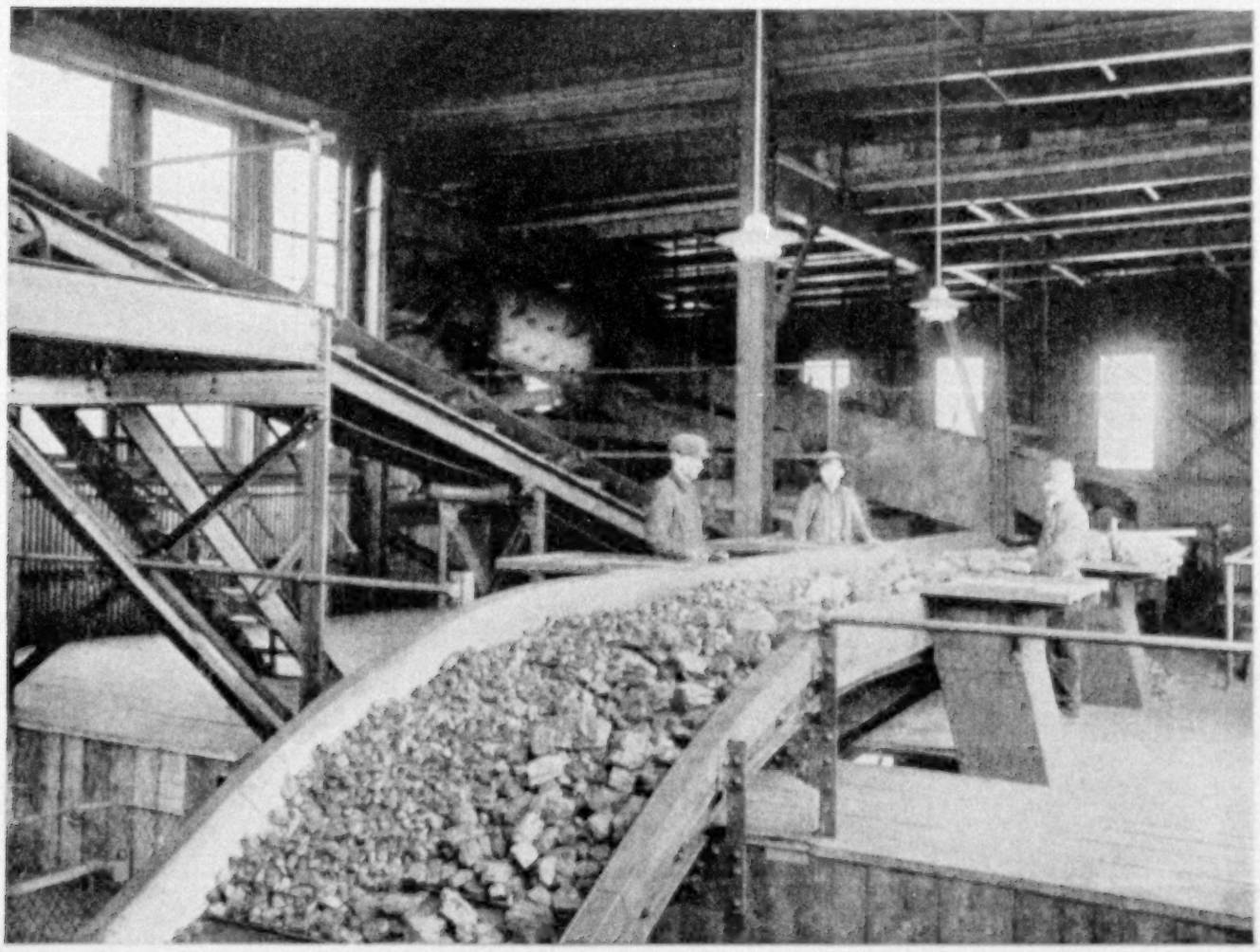
SLATE PICKERS AT WORK IN A SCRANTON BREAKER

The coal burned in the household grate had to "shoot the chutes" of a breaker before it was ready for use. After the mechanical slate pickers have finished their work, the coal is distributed to various chutes according to size and then hand picking takes out the slate that still remains with the coal.

But having seen the coal mined, brought to the surface, and put through breaker or tipple, it will be well to follow that coal to the market, and for that purpose we will watch the Jersey Central gathering the loaded cars from the Lehigh & Wilkes-Barre collieries, which it owns through stock control, and moving them to market.

A number of engines are busy all day long collecting the cars from the several collieries. These they move up to Ashley, at the foot of the Wilkes-Barre Mountain. From this point they are dragged to the summit by a series of three inclined planes and cableways.

Safely at the top, twelve miles from Ashley by rail, but only a few thousand feet by incline, the cars are released and roll by gravity down to Penobscot yards,



Photograph by Heyl & Patterson

SLATE PICKERS AT WORK

Moving by on an endless apron, hour after hour, the coal is looked over by the pickers, whose duty it is to take out every piece of slate. It is wonderful how well trained their eyes become.

just over the brow of the mountain. Here, with much switching, a train is made up and you think it is starting on a straight run for market.

But that is a mistake. The train will run only as far as Mauch Chunk, 27 miles away. Here it will go into the yards, behind great accumulations of other cars. There is more switching; and some time, maybe the next day, maybe several days later, these cars are put into other trains and started to tidewater. There they go into yards again and more switching takes place, with road engines idle while yard engineers work.

Why coal trains must be made up, broken up, made up, and broken up again, amid all the confusion and congestion of crowded freight yards, instead of being so made up at the point of origin, that all lost motion may be dispensed with, well may puzzle the uninitiated.

Under even a headway of twelve miles an hour, a coal train ought to run from Wilkes-Barre and Scranton to New York in eleven hours; and yet cars are oftentimes many days wending their way through congested yards to their destination. They spend from two to ten hours in yards where they spend one rolling to market.

THE CREATION OF COAL

Having seen the harvest in the coal field, let us turn to the seed time. Millions of years ago Nature stored away billions of tons of coal for us, and then left us a record of her processes written in a language that all ages and tongues can understand. It is a story so wonderful as almost to defy belief, and yet one so plain to him who reads it as to defy unbelief.

Under every seam of coal there is a bed of clay, and in this clay may be seen petrified stumps and roots with the trees they supported shooting up through the

Photograph by J. Horgan, Jr.

BREAKER BOYS AT LUNCH TIME

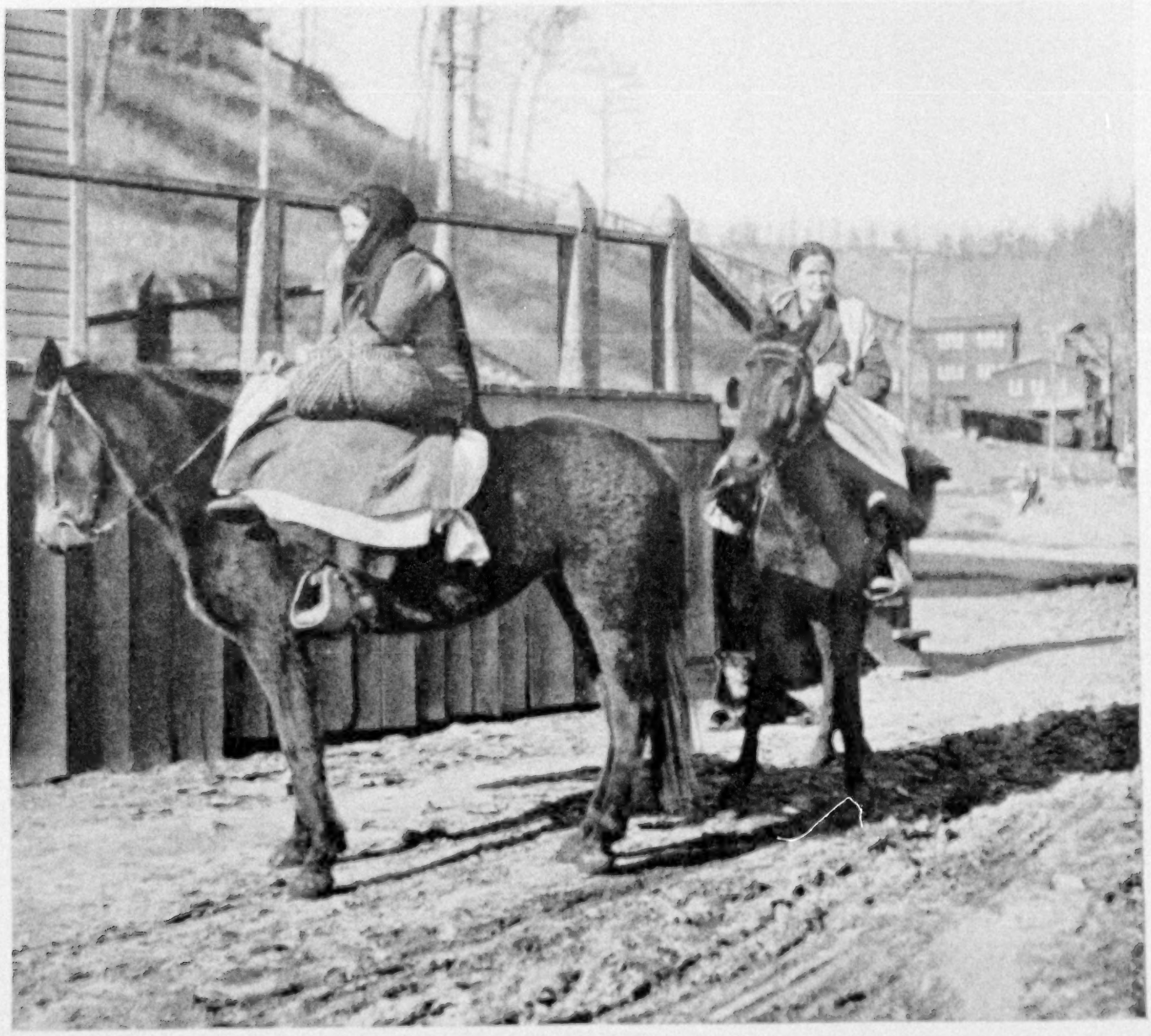
In the days before child-labor laws began to mean something, such youngsters as these spent most of the years of their minority in the breakers picking slate. But now they are in school and older boys and men must do the work. But at that, many a breaker-boy of the past is now a successful business man.

coal itself and through the slate above. With this evidence, can it be doubted that trees grew in the coal-forming age? And when you find petrified ferns and shells above and below the coal, and evidences of them in the coal when placed under a powerful microscope, can you doubt that plants were existent, or that there was animal life on the earth in that era!

And when you discover sandstone and slate placed in exactly the same position as sand and silt deposited by rivers upon the floor of the continental shelves of the sea, can you doubt that this sandstone and slate were once sand and silt submerged beneath the sea, especially since you find the remains of all sorts of sea life in them?

And, furthermore, when you find above the seam of coal and its overlying strata another bed of clay, another seam of coal, and other overlying strata, and above them still another series, and yet another, until there are as many as eighteen seams of coal, with their attendant strata of clay and slate and sandstone, is it possible for us to interpret Nature's message otherwise than that there were eighteen risings and sinkings above and beneath the waves, eighteen crops of carbonaceous materials gathered, garnered, and carbonized for our benefit?

Yet these are but a few outstanding passages in the amazing story Nature has written for the seeker after the truth of the geological story of coal. Those who are able to understand the sermons that



Photograph by Earle Harrison

NATIVE MOUNTAIN WOMEN COME FROM MILES AROUND TO THE COMPANY COMMISSARY TO TRADE: MONEY IS RARELY USED, AS THEY GIVE FOR MERCHANDISE BUTTER, EGGS, AND CHICKENS

the great Author has written in the rocks, and to translate the books that He has compiled in the running brooks, find the wonderful story of earth history told in twelve great chapters representing as many eras in geological time.

As we descend the coal-mine shaft, we begin to leaf backward in the great book of Nature. The first chapter we come to is the last one in the book, and it begins with the advent of man on the earth. Next to that is the chapter which gives the story of the age of mammals. It takes the two chapters beyond this to tell us the story of the age of reptiles. Then we come to the fifth chapter from the end, or the seventh from the beginning, and it tells us the remarkable story of coal.

In thus leafing backward in the book of the ages, as we descend the shaft, we scan millions of years of geological history.

The chapter which tells us of the coal age is an amazing account of a wonderful time. We find that there were many kinds of fishes existing in those times, but that there are few evidences of other than gill-breathing creatures upon the earth. Not a single specimen of animal life of that era has survived to this time, but there was a vegetation of unbelievable abundance and size.

Many of the plants which existed then were plainly the ancestors of plants

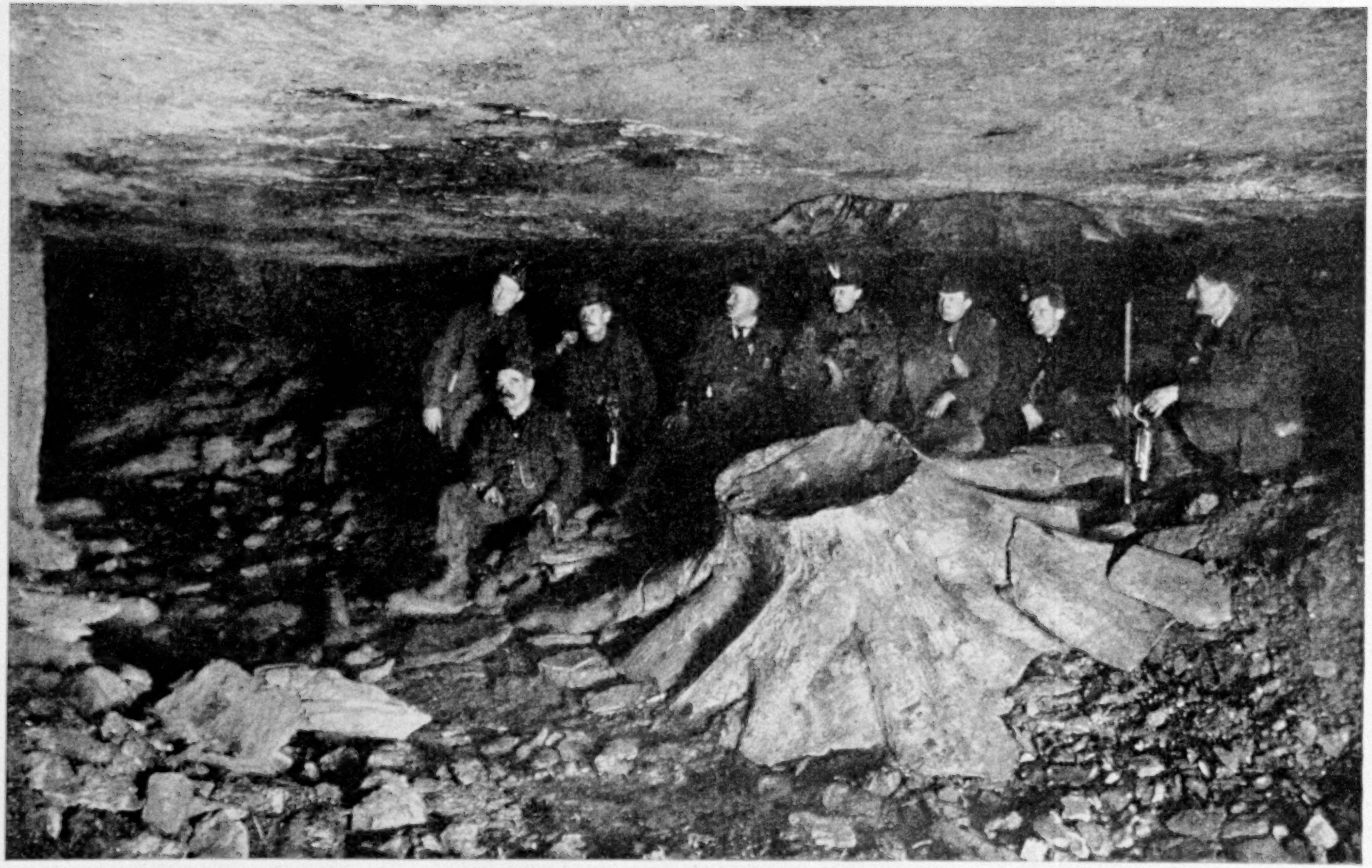
Photograph by J. Horgan, Jr.

A COAL VEIN THAT YIELDS SOME TWO THOUSAND TONS TO THE ACRE

When it is realized that the densest forest that living man has ever seen would make a coal seam less than an inch thick, the tremendous amount of vegetation required to make this ten-foot seam can be realized. Who can appreciate the majesty of the Creator of all things so well as those who can read Nature's account of the wonderful processes of creation! (see text, pages 423, 425, 428).

XUM

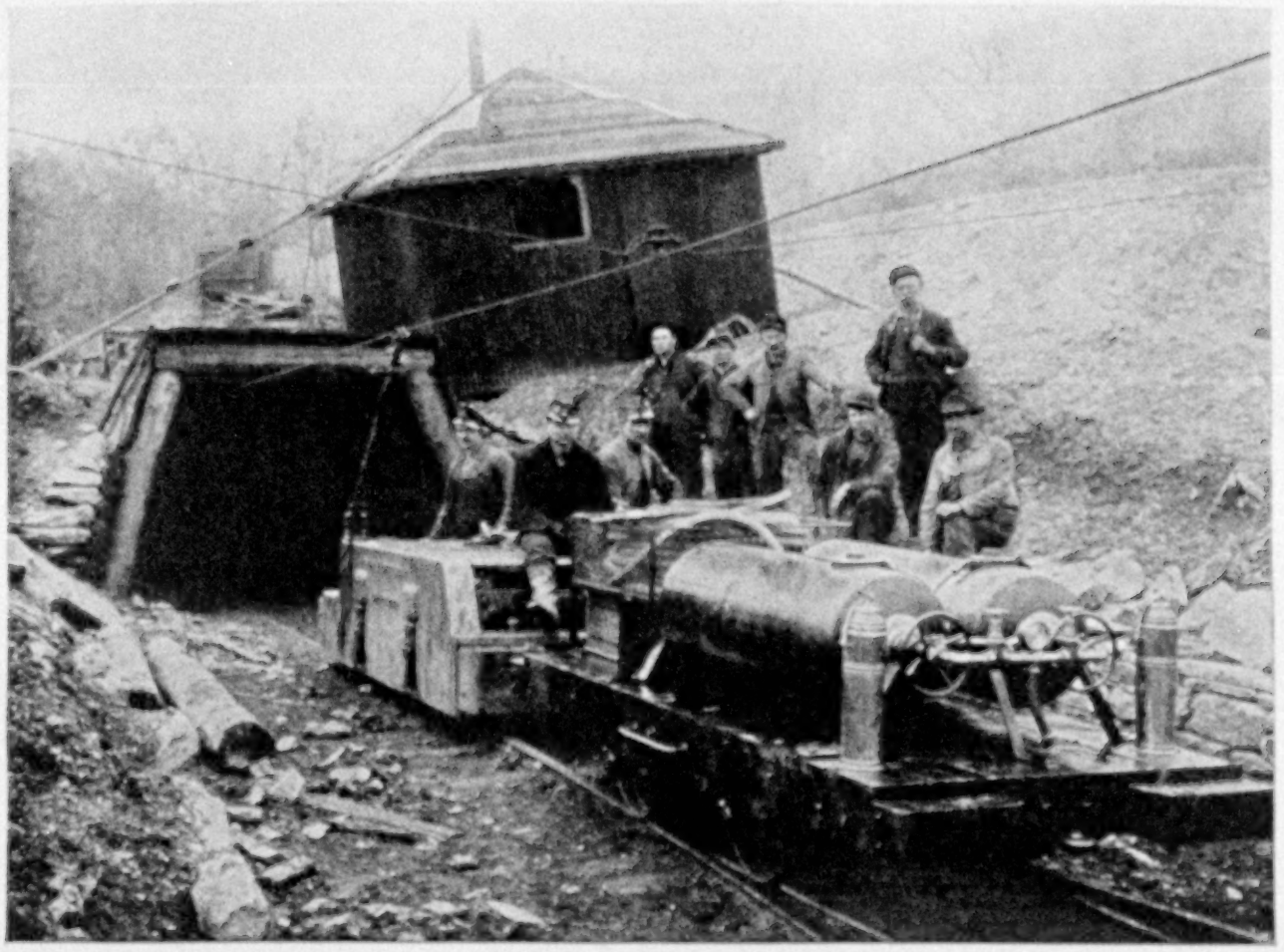
MOX XUM



© J. Horgan, Jr.

PETRIFIED TREE STUMP IN THE CORK AND BOTTLE MINE: SCRANTON, PA.

This is a tiny paragraph from the chapter on carbon in the great Book of Nature. It is a volume compressed into a sentence in picturing the story of the formation of the coal we burn. Could every man go down into a deep mine and there read of the painstaking processes by which a bountiful Mother Nature so richly provided for us, there would be a fuller appreciation of the genial miracle-working heat which is coaxed from coal.



Photograph by J. Horgan, Jr.

CHEMICAL FIRE-FIGHTING APPARATUS FOR MINE PROTECTION

Every precaution is taken to protect mines from fire disaster. In the Carbondale country of the anthracite area there is a mine that has been burning for years. It has never been found possible to check the flames. Occasionally there are cave-ins which startlingly suggest the bottomless pit. Restoring a mine after a serious fire is often a matter of years.

which live today, but the survivors are pigmies, measured by the giant statures of their antediluvian ancestors. Trees that rose to a height of fifty feet and possessed trunks two or three feet in diameter are now represented by plants with stems a fraction of an inch in circumference and a foot or so high.

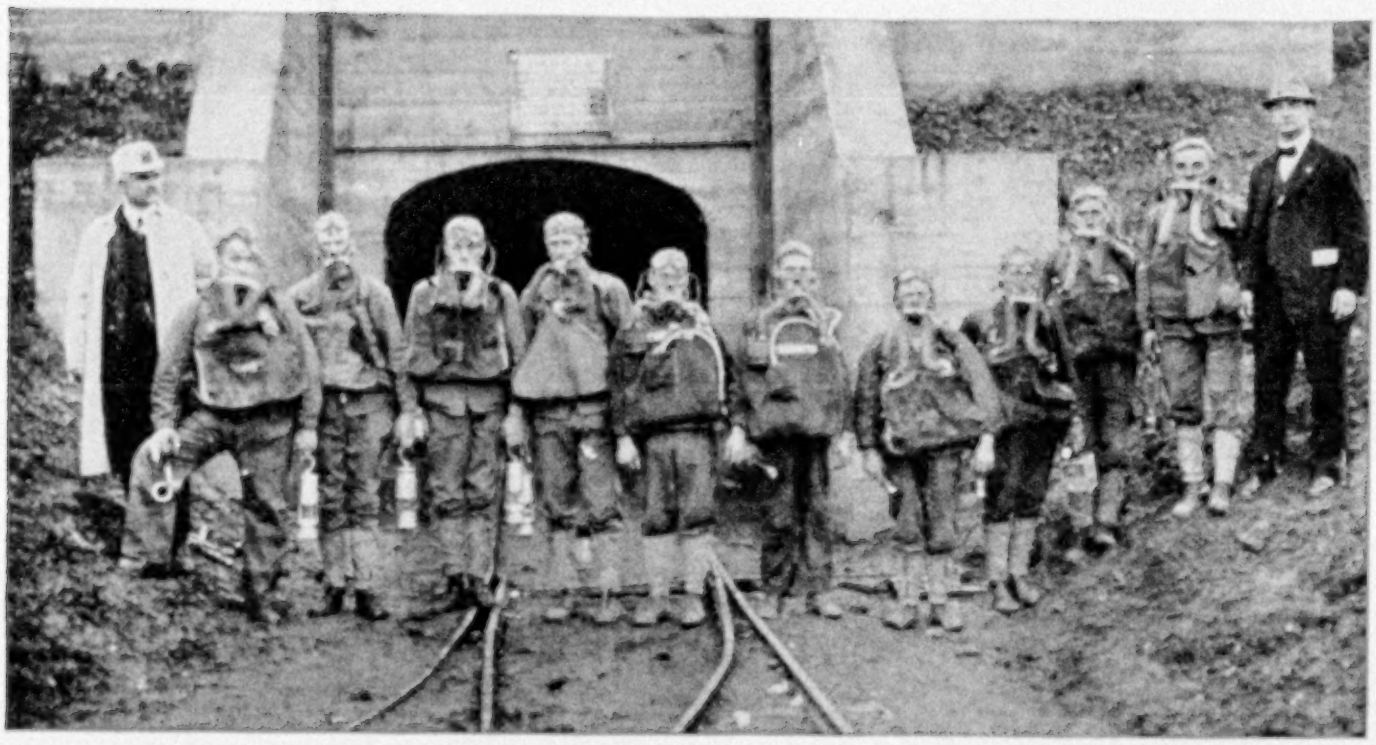
AMAZING COAL-AGE VEGETATION

Nor was the difference in luxuriance as compared with today less great than the difference in size. There was the great lepidodendron, a club moss which grew from forty to fifty feet high; its largest existing descendant reaches a height of not more than three feet. There was the sphenopteris, a giant fern raising its head like a palm tree; there were the calomites, cousin of the modern horsetail, which grew in dense jungles; and there were even grasses which grew to the height of a forest of twenty years growth.

Perhaps the most striking of all coal-age vegetation was the beautiful sigillaria, a monarch of the carboniferous forests, whose trunk often swelled to five feet in diameter and possessed a bark that seemed studded with sealing-wax impressions.

In a single mine in England thirty of these trees were found standing in their natural position in an area fifty yards square, the wood of each petrified and the bark turned to coal. In some cannel-coal mines whole trees have been found, with roots, branches, leaves, and seeds complete, all converted into the same quality of coal as that surrounding them.

Those were happy days in the vegetable kingdom. Plant life was quickened as animal life is stirred by the ozone of the sea, for the air was laden with unim-



Photograph from U. S. Bureau of Mines

EQUIPPED FOR RESCUE WORK IN COAL-MINE DISASTERS

It would be difficult to overestimate the value of the work of the United States Bureau of Mines in the improvement of methods for the prevention of mine disasters and in rescue operations in the accidents that, in spite of every precaution, still occur. Modern appliances and quick mobilization of rescue forces have saved thousands of lives in the industry.

aginable supplies of carbonic acid gas, which was inhaled by the Brobdingnagian jungle.

Indeed, so rich was the atmosphere in its supply of this gas that while it made vegetation grow extraordinarily rank it would have suffocated man. Furthermore, there was warmth exceeding anything we know in the tropics today, and there was moisture in abundance—more than the most spendthrift of plants could wish for.

The vegetation of that time was not limited by zones, neither by continents. In the coal beds of Alaska, in the measures of the Antarctic, or in the mines of Australia, Europe, Asia, or America—in them all one finds evidences that the five hundred specimens of plants of that era, preserved by Nature for our inspection, acknowledged no climatic zone nor found themselves limited by any ocean.

How amazingly dense was the vegetation of the coal-forming era may be shown by comparisons with existing forests. The densest jungle I have ever seen is that lying along the Motago River, in Guatemala, and men who have traveled in every tropical land of the earth say that they have never seen anything surpassing it.

Should Nature, by the processes of the coal age transform that jungle into a coal seam, it would be only a few inches thick; yet there are coal seams existing today which are sixty feet thick, though ten feet is regarded as a fine seam, and three feet will produce more than five thousand tons to the acre.

THE FAMILY-TREE OF COAL

It is interesting in passing to note the family-tree of coal. Wood contains some 50 per cent of carbon. As dense forests have decayed they have left peat beds behind them. Subjected to the pressure of superincumbent strata, and touched slightly with the internal heat of the earth, peat becomes lignite, and we can see peat so near to being lignite and lignite so near to being peat that the line of demarcation is hard to draw.

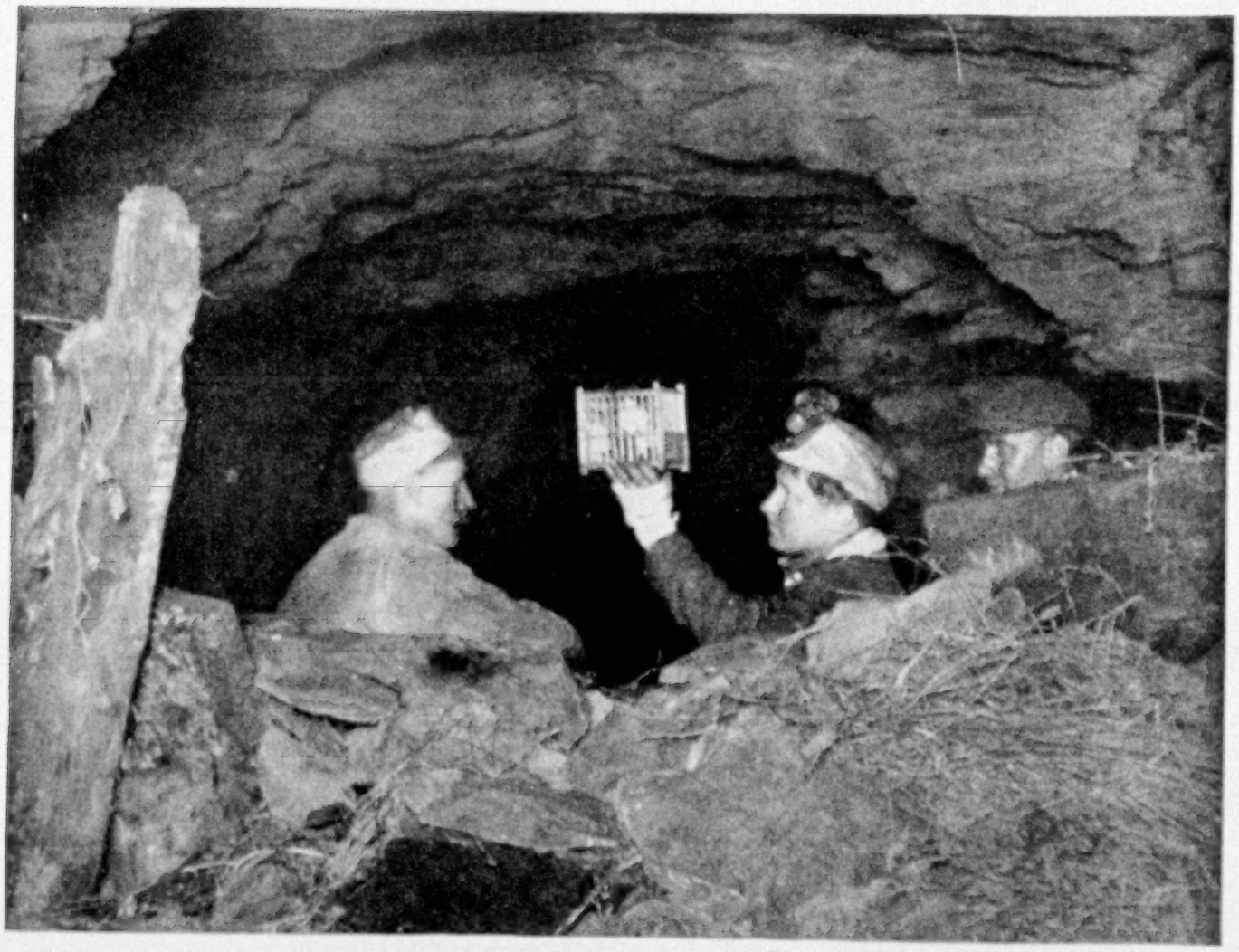
After lignite comes cannel coal, the connecting link between lignite and bituminous coal. Bituminous coal contains approximately 88 per cent of carbon as compared with 67 per cent in lignite and 84 per cent in cannel coal. Anthracite

Photograph from U. S. Bureau of Mines

FATEFUL HOURS AT A MINE SHAFT

Who can adequately picture the anguish of soul and the suspense of waiting of these women and children called to the mouth of a mine by news of an explosion that has entombed, if not incinerated, husband, father, and brother down in the cavernous depths? Dark and silent, standing like a flock of frightened sheep, there is no shrieking of women, no struggling of frenzied mothers. But there is that awful, tearless, patient silence, such as only the dismal dread of a mine disaster can awaken.

XUM



Photograph from U. S. Bureau of Mines

A TINY GUARDIAN OF THE MINER'S WELFARE

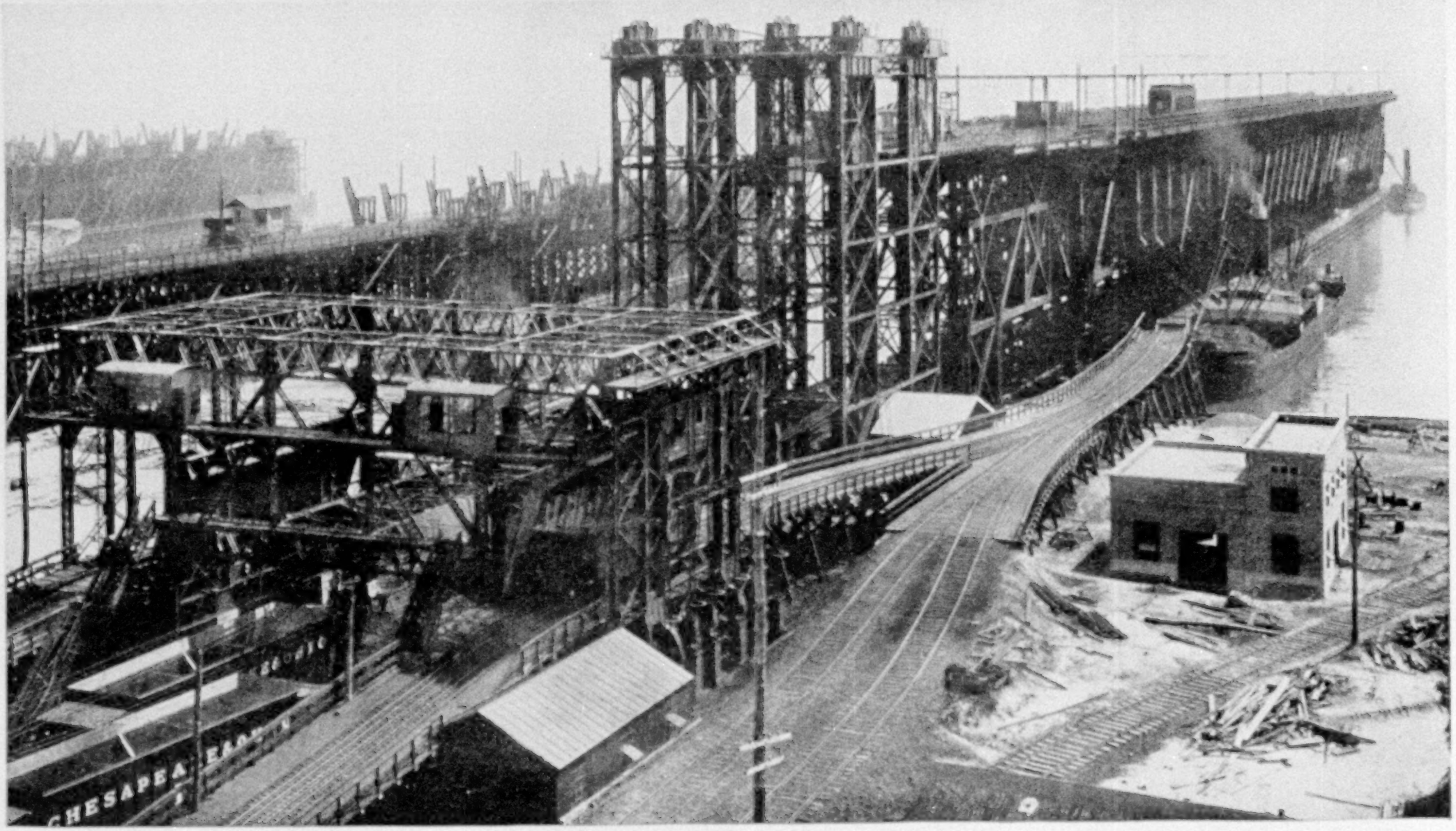
As susceptible as men are to the overwhelming effects of mine gases, the canary bird is much more so. The result is that in many disasters the birds are made the outposts of the invading army of restoration. They are overcome long before man can detect the presence of the gas and therefore warn the men of the dangers ahead.

goes still higher in carbon, with 93 to 97 per cent. Then comes graphite, with still more carbon, and finally the diamond.

Here again Nature has shown us how she made the different kinds of coal. Occasionally in a bituminous bed we come across a little section of anthracite, and always there is basalt accompanying it. In some great volcanic eruption liquid lava was thrown out and it ran over the bituminous coal, driving out, by its intense heat, exactly as the coking process does, most of the volatile matter and transforming the bituminous coal into coke, which under great pressure hardened into anthracite.

Again, if anthracite or coke be subjected to the heat of an electric furnace, as it is by the abrasive manufacturers at Niagara Falls, it becomes an impalpable black powder. So, also, in the earth do we find places where anthracite underwent such intense heat that even the little gas it contained could not resist expulsion, with the result that the anthracite became graphite, which is widely mined and which the world uses alike for lubricating machinery, making lead pencils, polishing stoves, and shining shoes.

That the diamond, the head of the carbon household, was formed in the presence of iron, under tremendous pressure, was a theory arrived at by M. Henri Moisson, an eminent French chemist. Analyzing a great number of small stones, he found always a trace of iron present. He held that molten iron, cooling in the presence of carbon deep in volcanic depths, where there was little elbow room for it to undergo expansion in assuming a solid form, would exert a tremendous pressure upon the particles of carbon it

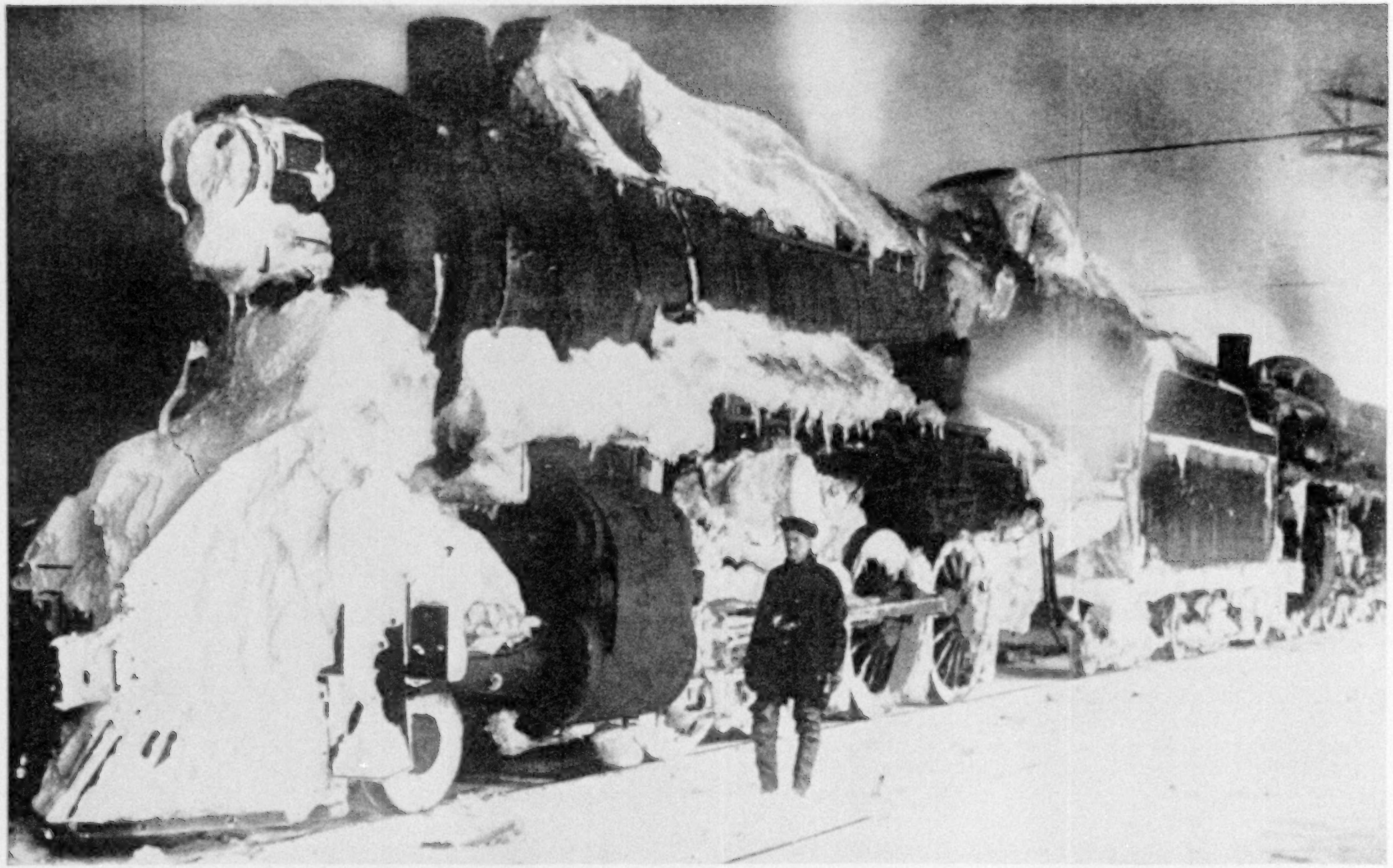


Photograph from Wellman-Seaver-Morgan Company

COAL PIERS AT NEWPORT NEWS, VA.

In the handling of coal one of the principal difficulties is the lack of storage facilities. Neither at the mines nor at the terminals is there provision for reserves. The mines cannot produce any more coal in any given day than the railroads can provide cars for its removal. Nor can the railroads haul more coal in a given day than the ultimate consumer can use. The result is that there is no real reservoir at either end, and the industry always has a hand-to-mouth existence. If storage facilities for coal, such as are used in the iron-ore trade, could be utilized the industry could better adjust itself to the working of the law of supply and demand. Some of the newer coaling plants can load 2,000 tons of coal into the hold of a ship in an hour. When it is remembered that it costs $1,000 a day to keep a 10,000-ton ship in commission, it will be seen how important rapid loading and unloading operations are.

XUM



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A SNOW-COVERED DOUBLE HEADER AT THE END OF A RUN

A very cold and snowy winter at all times presents to the railroader a situation that a layman sitting before a warm fire or impatiently waiting for his coal bin to be filled can little appreciate. When transportation facilities are taxed beyond their limit, conditions such as prevailed last winter involve difficulties and trials for train crews that would discourage the most indomitable.

absorbed, and that these would thereupon assume the crystalline form.

He decided to attempt a duplication of the process. Packing a cylinder of soft iron with the carbon of sugar, he placed the whole in a crucible filled with molten iron, which was raised to a temperature of 3,000 degrees by means of an electric furnace. The soft cylinder melted and dissolved a large portion of the carbon. The crucible was thrown into water and a mass of solid iron was formed. It was allowed further to cool in the open air, but the expansion which the iron would have undergone on cooling was checked by the crucible which contained it. The result was a tremendous pressure. Opening up the crucible Moisson found his theory correct. He had duplicated Nature's process in a small way and had achieved Nature's results.

SUBJECTS UNTOUCHED

Thus we see that the difference between peat and diamonds is only a difference in degree of heat and pressure applied to carbon in geological ages gone by, and the marvelous story of coal links the beautiful ferns and the stifling carbonized atmosphere of millions of years ago to the scintillating diamond and the dark mine of the living present.

One fain would let his enthusiasm outpace his judgment with such an inspiring story to chronicle and write a book rather than an article, for there is so much that remains untold. The picture of the world before coal was utilized remains undrawn; the vastness of coal beds of the earth and their influence upon nations and peoples remain unappraised; the history of coal utilization remains unwritten; the need of coal conservation and the inefficiency of modern engines, which waste from 85 to 95 per cent of the energy in the coal they use, remain undiscussed; the life of the miner and the heritage he bequeathes to humanity have been barely mentioned.

These and many other phases of the thrilling story of King Coal and his beneficent reign upon the earth must be passed over. Sitting by a warm fireside, reading a favorite magazine, how little we reckon all the ramifications of the wonder tale of the seed-time and harvest and utilization of Nature's great gift of heat and energy to man!

THE SPIRIT OF THE GEOGRAPHIC

IT IS a stimulating privilege to see into the heart of a generous, sympathetic, and patriotic people. Such a privilege has been the rich experience of the Board of Managers of the National Geographic Society since an announcement, first appearing in the pages of the GEOGRAPHIC some months ago, invited the members of the Society to contribute to a fund for the establishment of a Geographic Ward in American Military Hospital No. 1 (then the American Ambulance Hospital), at Neuilly, a suburb of Paris.

That two wards have been established instead of one and twenty beds are now being supported instead of ten, as originally contemplated, is tremendously gratifying; but far more significant and inspiring than this fact has been the tender spirit of solicitude and often of self-sacrifice reflected in every contribution for this noble cause.

From every quarter of America and from members in distant parts of the world the response has come. The membership, in spite of the extraordinary demands made upon them for the support of Liberty Loans, Red Cross and War Service Community drives, and the expanded needs of their local charities, have yet found the occasion and the means to subscribe generously toward this fund for the care and comfort of our wounded boys in these Geographic wards.

Even more moving has been the response of those whose contributions have been made at the expense of personal privation, and how beautiful has been the tribute of those who have given not only

money, but the fruits of their individual industry.

ORPHANS SEND THEIR PENNIES TO PROVIDE A TREAT FOR THE WOUNDED

Whereas a "fellow-feeling makes one wondrous kind," suffering and sorrow make us supremely sympathetic, as attested by the following letter to the Editor received from Mrs. Cynthia A. Mann, secretary of the Children's Home Finding and Aid Society of Idaho, at Boise:

"I saw in the July number of the GEOGRAPHIC MAGAZINE that your Society had two wards in American Military Hospital No. 1, Neuilly, France, and that it cost $600 a year for a bed without any extras. I want to do all possible in my little way and encourage the unfortunate wards in my charge (I am teacher in our orphans' home). I paid them for pulling weeds, and they saved their pennies and earned nearly $4.00. I told them we would send $10 for an ice-cream treat; and I wish to feel that I have maintained a bed for at least ten days, so please find enclosed a draft for $26.50. Please be sure of the *treat*, for our little ones feel that they worked very hard. Two of them blistered their hands. We weighed the weeds; one little 9-year-old pulled 25 pounds and earned 50 cents. Some under 6 years pulled a pound.

"If the boys Over There could know of the love and ardor of their affection they would enjoy the treat doubly. I have made four scrap-books, which every one pronounces very interesting, and I spent much time, thought, and labor to make them worth while for the entertainment of our dear lads while in hospital. Wit, humor, patriotism, sentiment, valor, devotion to home, country, and truth are illustrated by picture and story. Some old, old gems; others new, grown out of the times. I wish to send these to your wards. How can this be done? Would you be kind enough to write me. I wish we might hear from some of the patients. It would be a great day in *The Children's Home*. And what a memory to have for all time, 'We sent the soldier boys a treat and they sent us word they got it and it was fine.'"

TRUE SERVICE BY COLLEGE GIRLS

At the opening of the autumn term of Flora Macdonald College, Red Springs, N. C., the president, Mr. C. G. Vardell, wrote to the Society saying that the faculty and student body had read with deep interest Carol Corey's article, "A Day in the Geographic Wards," and that they would like to support a bed in one of them. He added that the young lady students, instead of taking the amount from their allowance, proposed to earn the money by doing the work around the college which housemaids had been doing, and thus show the real spirit of their purpose. In reply to a letter heartily approving the plan, Mr. Vardell wrote, on September 25:

"Your very kind letter of the 21st has been received. I read it to my student body last night and they received it with tumultuous applause. They are gladly doing this service, and I call it *real* war service.

"How shall we remit the money to you? Once a month, if you say so. If possible, the students would like a small, inscribed placard at the head of the bed. Will they be allowed to make scrap-books and provide small things especially for that bed? They want it to be just the best bed that ever was spread in any hospital and are prepared to do all they can to make it qualify as such."

The remittance has been coming to the Society regularly on the first of each month, and over one of the beds in the Geographic wards there is framed today a neatly printed legend, reading:

BED MAINTAINED BY
FLORA MACDONALD COLLEGE

THE TRIBUTE OF AGE TO SACRIFICING YOUTH

Pathos, industry, devotion to our country's cause and to our soldiers' needs are reflected in the many letters which have accompanied contributions of afghans, pillows, pajamas, bathrobes, slippers, comfort bags, and many other useful articles for the equipment of the wards and to convey a touch of "home" to the youths who are suffering from nostalgia as well as bodily pain in a foreign land.

XUM

THE MOTHER OF THE REGIMENT

A famous English poet has pointed out that we may live without poetry, music, and art, but "civilized man cannot live without cooks." Ask an American doughboy if life would have been worth living at the front without the Salvation Army cook, comforter, and general utility cheerer. That this noble servitor for the American soldier is doing her all under fire is attested by the fact that she is wearing her shrapnel sombrero, and the only jewelry which adorns her person is the "bracelet" of her identification disk.

Here is a typical letter from a bereaved husband in New York State: "The enclosed blanket was knitted by Mrs. ——, age 70 years, while suffering from a broken ankle last winter. She desired that it be sent to France. As the National Geographic Society maintains several hospital units there, we concluded it would be proper to present it to you for one of them. Shortly after finishing the blanket Mrs. —— died suddenly of heart trouble."

A short time ago there came to the Editor's desk this eye-dimming missive: "It is not much I can do, as I cannot afford to, as I am a Civil War veteran's widow. But I want to do anything I can for our dear boys who have shown their love of country and their loyalty, too. I am 81 years old. I hope you will like the wash-cloths. I have never knit anything before. If I can do anything else, please let me know."

Here, indeed, is inspiration for another parable of the Widow's Mite.

And, at the other end of life's scale, the day's mail brings a package of towels, comfort bags, and one wash-cloth knitted by the eight-year old daughter of a Vermont mother whose son is in the army.

From New Orleans there comes a "happiness quilt," with a letter which adds, "If you want more such quilts for our convalescents, all right, you will get them; for, when off duty, as a lawyer (a woman), I *can* knit and, better yet, I have lots of friends I can press into service."

A HERO OF 1861 KNITS FOR THE HEROES OF 1918

From Springfield, Mass., comes the following: "I am writing you in the interest of my father, —— ——, who has been a subscriber to the NATIONAL GEOGRAPHIC MAGAZINE for some time. We recently read in one of the issues an article on a Paris hospital, two rooms of which are furnished by the Geographic Society for the benefit of American soldiers. My father is 85 years old, a G. A. R. man, and his grandsons—my three boys—are now in the service, two of them in France. He has been for the past year industriously knitting, until now he has completed two afghans, which he very much desires should be sent to that very hospital in which you are interested."

Comfort bags, made and filled by mothers of Annapolis graduates during June week; six afghans, knitted by the young ladies employed in the headquarters of the National Geographic Society; comfort bags, designed as Christmas gifts for each boy occupying a bed in the Geographic Wards; scrap-books from Camp Fire Girls; an afghan from Cuba; boxes of sheets, pillows, and other supplies from many women's clubs; two great boxes of hospital supplies from the women of Ohio; afghans knitted in small squares by the school children of many States—these are some of the contributions which have flowed into these offices continuously since the first announcement of the need for them, and will continue to be received, for that need is not yet satisfied, with tens of thousands of wounded men still in France.

Not all of the contributions have come through the mails. A few mornings ago there called at the editorial offices of the Society a matron in whose eyes tears gleamed as she confessed that her health was such that her efforts to assist in Red Cross work had proved futile. "All I can do is give," she added. "My son enlisted in the British army before America entered the war, but he has since been transferred to our own expeditionary forces, and I want to feel that I have aided in giving comfort to some one of his associates who may be stricken on the firing line. Will you allow me to endow one bed in one of the Geographic Wards for a year? I would like to contribute, in addition to the $600 for the support of that bed, $5 a month to buy the 'extras'—fruits, chocolates, and 'smokes'—which Mrs. Corey mentioned in her account of her visit to the wards."

YOUR PERSONAL INTEREST DESIRED

Thus have members of the National Geographic Society responded to an opportunity afforded them to establish a direct personal bond with the men who have suffered for us Over There, while we have endeavored to sustain them and our common cause Over Here.

XUM

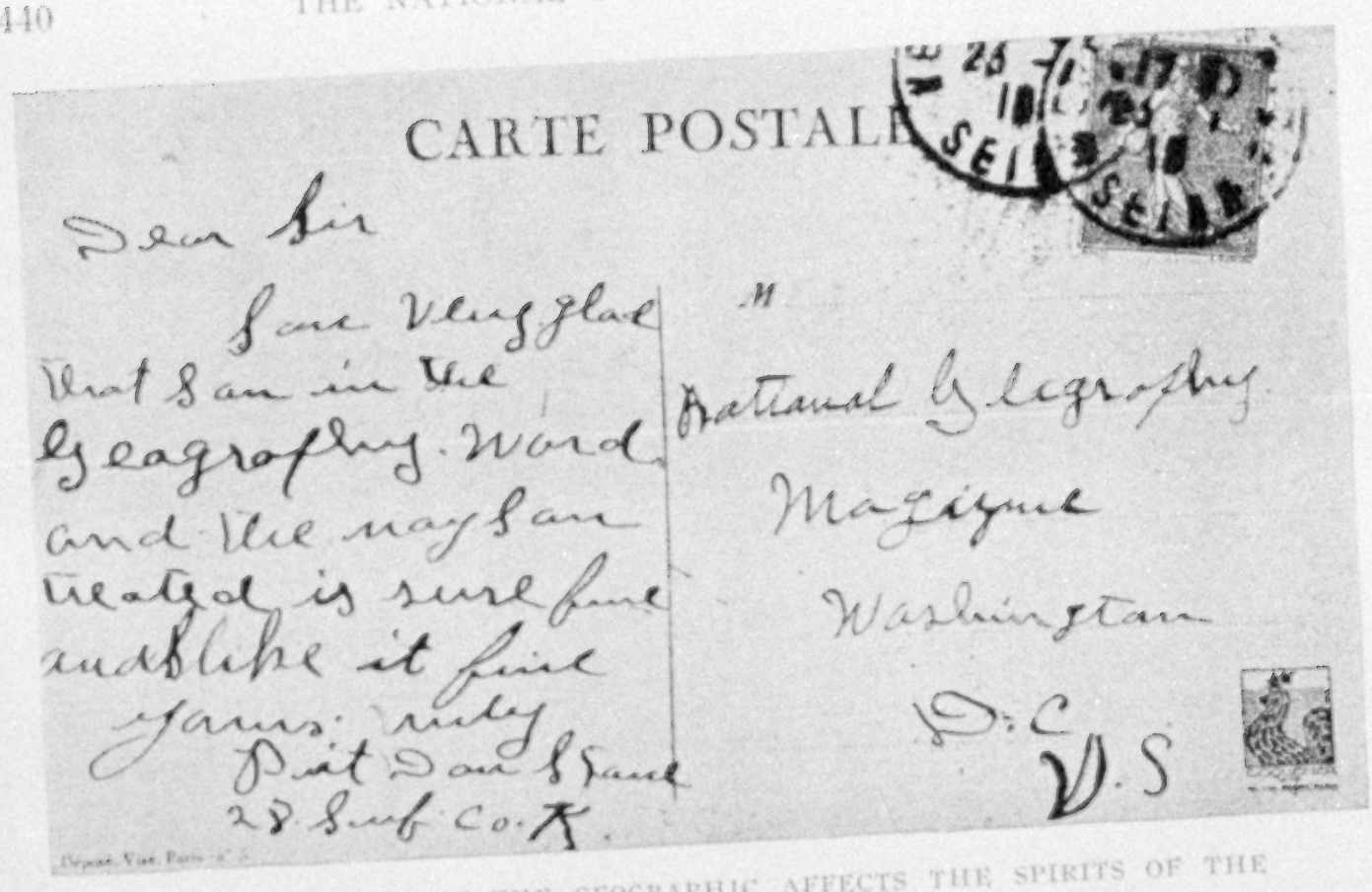
MUNITIONS MAKERS IN THE FRONT LINE TRENCHES

Not the ordinary kind of high explosive shell and machine-gun bullet, but the kind that put "pep" into the American soldier in his battles with the Hun. Here is a typical pie "factory" conducted by Salvation Army workers.

XUM

THERE WAS NO PLACE WHICH RADIATED THE SPIRIT OF HOME FOR THE BOYS AT THE FRONT MORE EFFECTUALLY THAN THE SALVATION ARMY KITCHEN

The distribution of doughnuts was invariably accompanied by something less tangible but infinitely more important in the maintenance of morale—a smile and word of good cheer. The little demons of homesickness fought a losing fight whenever they came in conflict with the spirit of cheeriness which was always in evidence in the presence of a Salvation Army lassie.



HOW THE SPIRIT OF THE GEOGRAPHIC AFFECTS THE SPIRITS OF THE WOUNDED SOLDIER

A post-card greeting received from one of the American boys who is being nursed back to health and usefulness in one of the Geographic wards in American Military Hospital, No. 1, at Neuilly, a suburb of Paris.

The need for these splendid wards will not cease for many, many months, and it is hoped that the opportunity presented the membership for taking personal part in the operation and upkeep of the Geographic Wards will be embraced, especially since every dollar subscribed is applied directly, there being no salaries or overhead expenses of handling the fund.

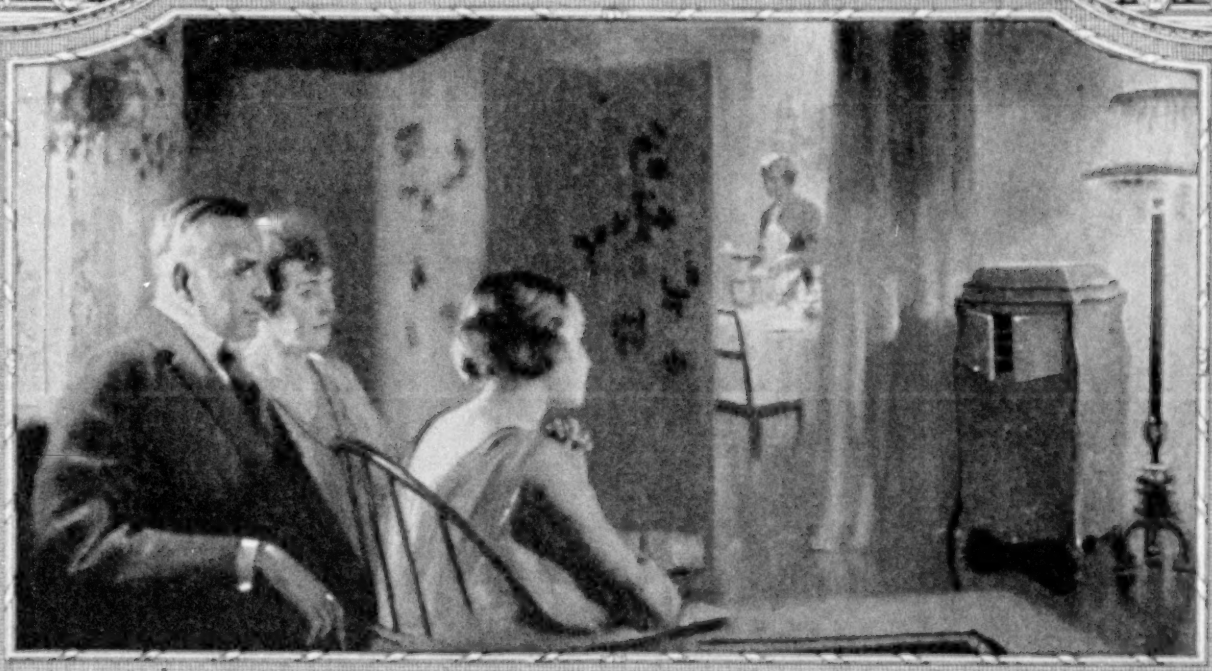
"THE RACES OF EUROPE" NUMBER

THE next number of THE GEOGRAPHIC will be devoted to "The Races of Europe," by Edwin A. Grosvenor, LL. D. This will be one of the most important monographs ever issued by the National Geographic Society, because the complexities of the race problem in Europe, which must be surveyed and settled, are of more vital interest to the world today than ever before in human history.

It is impossible to appreciate the variety and the seriousness of the racial questions now being discussed by peoples everywhere without a clear idea of racial origins, racial characteristics, and racial boundaries as distinct from political boundaries.

Dr. Grosvenor's authoritative and at the same time entertaining and dramatic story of the "Races of Europe" will prove of absorbing interest to the casual reader and of invaluable assistance to the student of European conditions.

It will be accompanied by numerous striking illustrations, and as a supplement there will be issued with the magazine a remarkable map, printed in 19 colors, which will prove a key and guide not only to the accompanying text, but to the day-to-day news from across the Atlantic.



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In homes throughout the land where the boys are absent in the service of Uncle Sam, the Victrola with its corps of noted artists is keeping up the spirit of the home-folks with its superb music and entertainment.

In the camps where our soldiers and sailors are gathered, the Victrola is also in active service doing its musical duty. Its cheering music and wholesome entertainment afford a welcome diversion to pleasantly while away the spare moments.

The Victrola is the messenger of cheer whose inspiring music is so necessary in these stirring war times. During the coming holiday season, it will find its way into many additional homes. And many new Victrolas and Victor Records will be among the Christmas gifts to bring joy to the hearts of the soldier and sailor boys in camp.

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SparOak, one of Graton & Knight Standardized Series Leather Belts, is a unique belt because it has super-gripping power and the firmness that resists the mauling of hard usage.

The side of SparOak next to the pulley is Graton & Knight Spartan—the belting leather with the highest co-efficient of friction ever attained in any belting material; the outside is the finest quality of Graton & Knight special oak tanned, extra firm center stock. Combined, they form a belt of absolutely unique quality.

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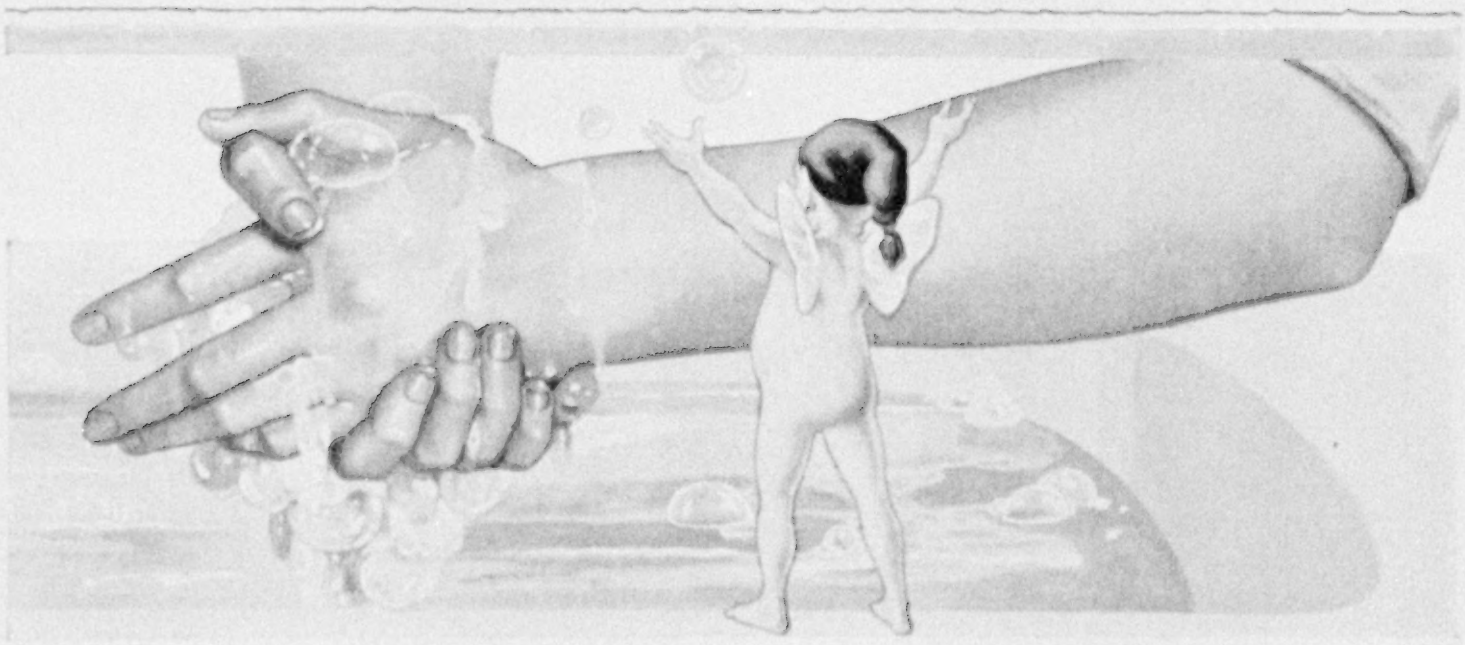

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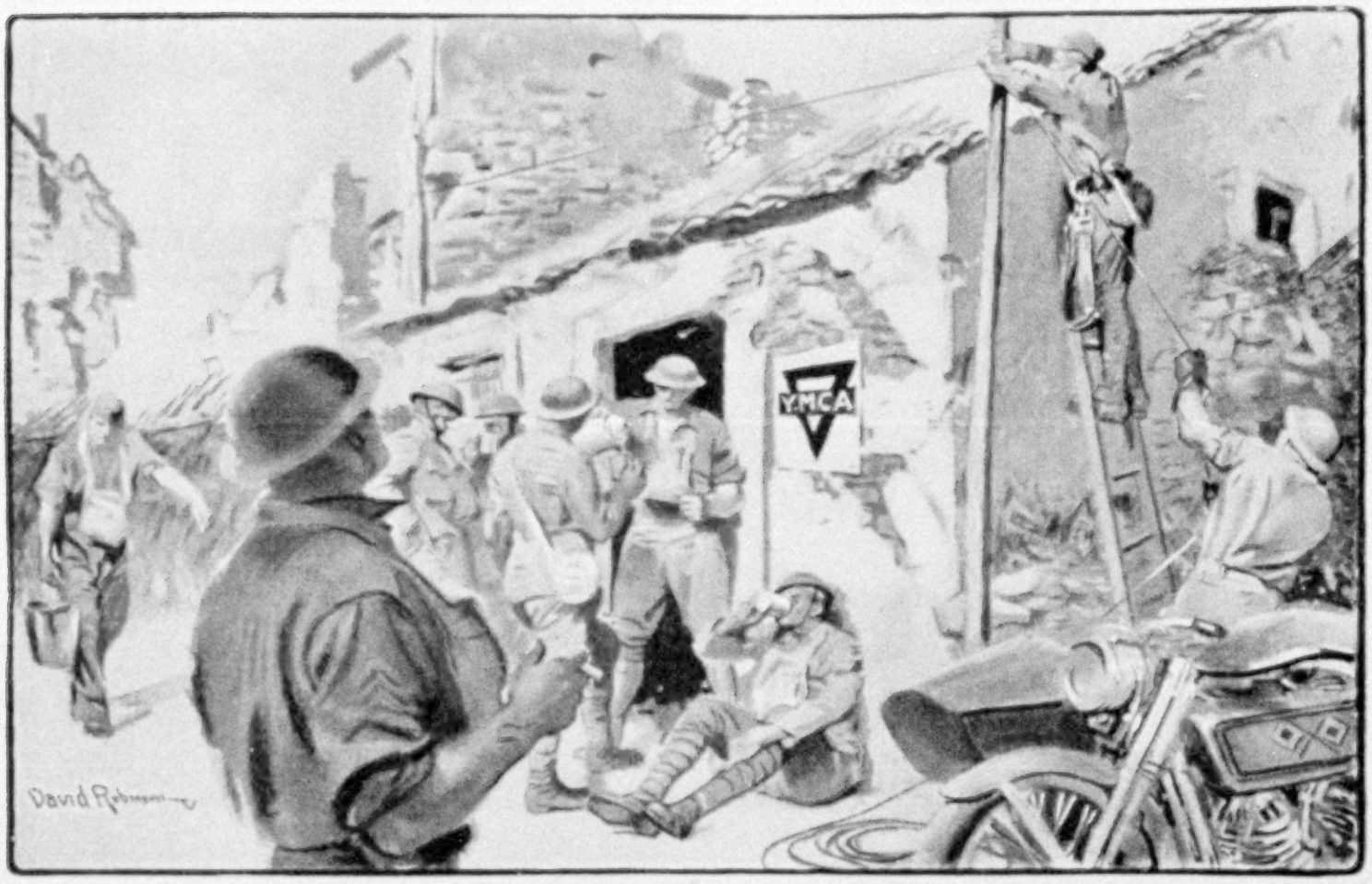

Unarmed Arms of the Service

Men from the battle front who have been holding the line for months and years complain of the monotony of war. The soldier's life in the trenches soon ceases to be a novelty and becomes a tedious routine.

The morale of the army is of supreme importance and the greatest military authorities of the world are enthusiastic in their praise of the organizations which make it their business to keep the soldier in good spirits.

This work, like that of the Signal Corps, has been more highly developed in this war than ever before. Huts for amusement, comfort and recuperation of the fighting men are in the trenches as well as behind the lines. The unarmed workers go about their duties under shell fire as coolly and as self-forgetfully as the telephone men of the Signal Corps who are frequently their neighbors, and who keep intact, often under a hail of bullets, the indispensable lines of communication.

It is for us who remain at home to support these unarmed heroes to the utmost, with our gifts, our labor, and our unbreakable morale.

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The Book of Birds

200 Pages, Illuminated with 250 Matchless Subjects in Full Colors, 45 Illustrations in Black and White, and 13 Striking Charts and Maps

No other Nature-book ever published at a moderate price equals The Book of Birds in the beauty of its illustrations, the fascinating quality of its authoritative text, and the charming intimacy with which it introduces the reader to shy Friends of Forest and Countryside, Seashore and Upland.

The three principal divisions of this beautiful book are the contribution of the gifted ornithologist and facile author, Henry W. Henshaw, formerly Chief of the United States Biological Survey. Dr. Henshaw possesses to a marked degree the rare faculty of describing the haunts and habits of Nature's wild creatures with the ease and grace of the born story-teller and with the insight and knowledge of the scientist equipped by wide experience and exhaustive research. And no author has ever had a more gifted or more sympathetic illustrating collaborator than has Dr. Henshaw in the noted naturalist-artist, Louis Agassiz Fuertes, whose 250 bird portraits, reproduced in full colors in this superb volume, have preserved with wonderful fidelity not merely the richness of tint in plumage but the animation and the personality, so to speak, of each subject.

An engaging chapter is contributed by F. H. Kennard on "Encouraging Birds Around the Home." Mr. Kennard persuades the reader to become a conserver of bird life, whether he be the possessor of a great estate or the owner of a window-sill.

That mysterious impulse which Nature has implanted in so many of her creatures—the migrating instinct—is the subject of a wonderful chapter by Professor Wells W. Cooke.

George Shiras, 3rd, noted as a traveler and naturalist and as the inventor of a method whereby birds and wild animals make their own portraits, gives a delightful account of photographing wild birds with a flashlight camera.

The Book of Birds is a gift to delight the naturalist who can spend days in the forest, the business man who has only an occasional hour in the woods, or the man or woman whose sole acquaintance with birds is made in the city parks. Placed in the hand of a boy or girl, it will inculcate an imperishable love of Nature and Nature's winged children.

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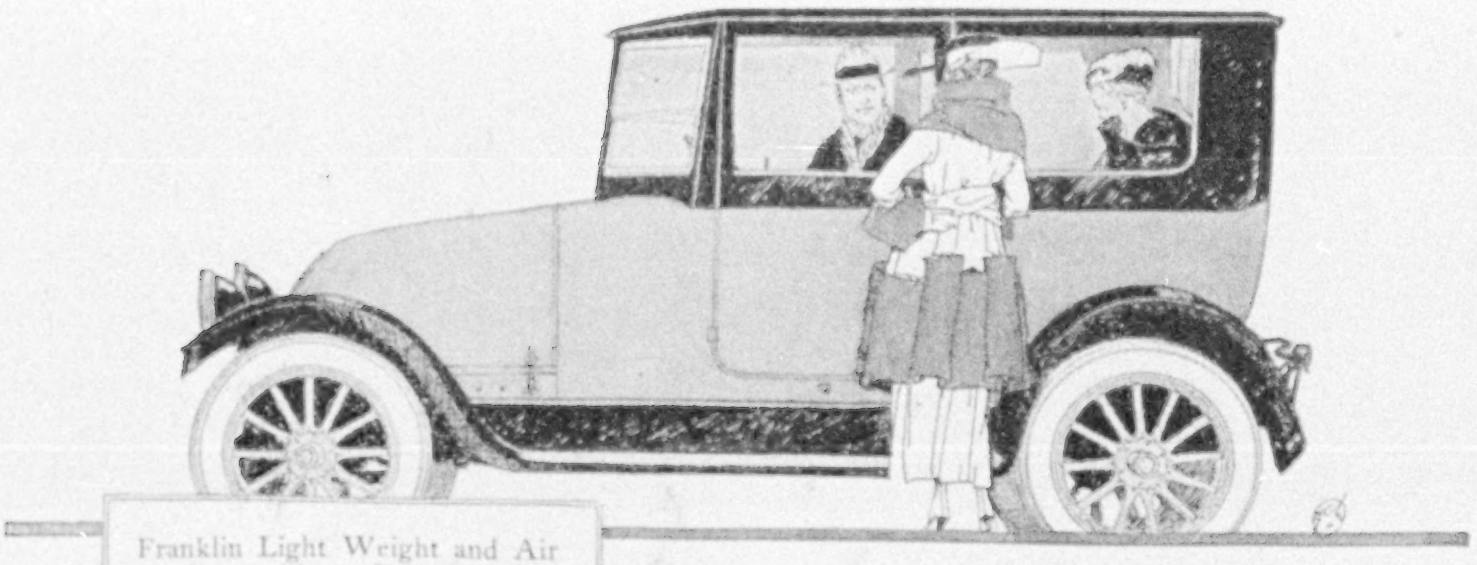

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The Franklin Car has always been built on the principle of utility, cutting out all excessive weight at the outset and relying on flexibility instead of rigidity; and now, without change, it meets your need and desire for a car to use—a car to ride in with the utmost safety, comfort, and reliability at the least expense.

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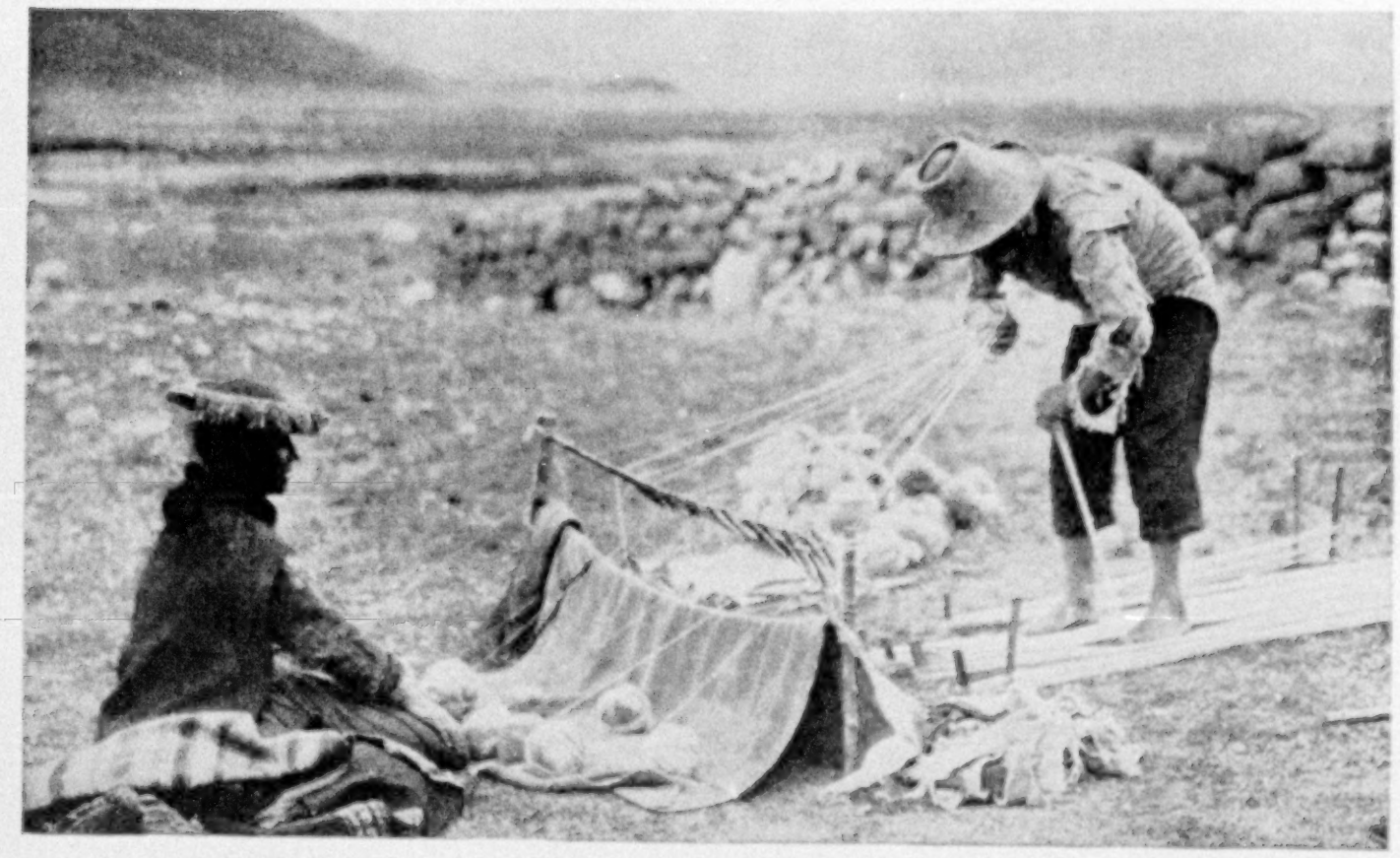

WEAVING BLANKETS ON HAND LOOMS: HIGHLANDS OF PERU

Scenes from Every Land

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200 Full-page Illustrations, 24 Pages in Matchless Four Colors, 20,000 Words of Descriptive Text

By GILBERT GROSVENOR, Editor National Geographic Magazine

EXCELLING in beauty and in compelling interest its three predecessors, the fourth volume of the National Geographic Society's "Scenes" series may now be secured from the Washington headquarters of the Society. The first two series of "Scenes from Every Land" have been entirely exhausted and cannot be had at any price, while only a few copies remain of the third. To insure your copy of the NEW series you should order at once.

"Scenes from Every Land" is like no other book in the world. It occupies a unique place in the literature of the universal language—the language of pictures, through which man becomes acquainted with his fellow-man on the other side of the world. The Editor has selected 200 photographic gems from the Society's great treasure-house of pictures, which is being constantly enriched by contributions from explorers, scientists, world-travelers, artists, and lovers of nature in every quarter of the globe. These pictures tell their own story of strange peoples, odd customs, the history of ancient civilizations written in the massive ruins of their temples, palaces, and amphitheaters, the master achievements of modern engineers—the builders of canals, bridges, and cities—and the inspiring manifestations of the handiwork of Nature, wrought in mist-crowned mountains, shimmering waterfalls, and landscapes of magic beauty.

The Society is able to publish this volume, which includes 24 pages in full colors, at a nominal price, owing to the fact that most of the illustrations have appeared previously in the NATIONAL GEOGRAPHIC MAGAZINE and the expense of engraving both the color and the black-and-white plates has already been borne. No picture in the Fourth Series, however, is to be found in any of the earlier volumes.

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How to End Film on Your Teeth

All Statements Approved by High Dental Authorities

It Must Be Done

Brushing teeth without ending the film is pretty nearly useless. Millions of people know that. They find that brushed teeth still discolor, still decay. And statistics show that tooth troubles are constantly increasing.

A slimy film which you feel on your teeth is the cause of most tooth troubles. It gets into crevices and stays, resisting the tooth-brush.

That film is what discolors, not your teeth. It hardens into tartar. It holds food which ferments and forms acid.

It holds the acid in contact with the teeth to cause decay.

Millions of germs breed in it. They, with tartar, are the chief cause of pyorrhea. So it is that film which wrecks the teeth.

Science has now found a way to daily combat that film. Able authorities have proved it by clinical tests. It is embodied in a dentifrice called Pepsodent, which countless dentists are now urging. It is bound to supersede old methods with every one who knows it.

A Test Will Show

The results of Pepsodent are so evident, so quick, that even a week's use is convincing.

Pepsodent is based on pepsin, the digestant of albumin. The film is albuminous matter. The object of Pepsodent is to dissolve it; then to constantly prevent its accumulation.

Ordinary pepsin will not serve this purpose. It must be activated, and the usual agent is an acid harmful to the teeth.

But science has discovered a harmless activating method. Five governments have already granted patents. It is that method—used only in Pepsodent—which makes possible this efficient application.

After a great many tests made by dental authorities, Pepsodent is recognized as the way to fight this film. And now we urge every one to prove it in their homes.

Send the coupon for a one-week tube. Use it like any tooth paste and watch results. Note how clean your teeth feel after using. Mark the absence of that slimy film. See how your teeth whiten as the fixed film disappears.

Stop your inefficient methods for one week. See how much more Pepsodent accomplishes. Then judge for yourself what to do in the future.

Cut out the Coupon now.

Return your empty tooth-paste tubes to the nearest Red Cross Station

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A Scientific Product—Sold by Druggists Everywhere

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XUM

A MONTANA DOE AND FAWN IN THE SNOW OF THE OPEN RANGE

WILD ANIMALS OF NORTH AMERICA

Intimate Studies of the Big and Little Citizens of the Mammal Kingdom

More than 200 illustrations: 127 Paintings reproduced in full colors; 50 Track Sketches, a number of Drawings of Prehistoric Mammals and many illustrations from unusual photographs reproduced in black and white.

THERE is no subject richer in fascinating interest than the study of animal life. To see all the types and representative species in their native environment, to watch them meeting their respective problems of life and adapting themselves to the conditions they have to face, and to follow nature through its many moods as typified by its wonderful variety of mammalian forms is a delightful and informative diversion.

To do this under the guidance of one of those born observers, whose eyes are always open, whose ears are always keen, whose brain is always quick to grasp, and whose pen is ever facile, is to become intimately acquainted with one of the richest chapters in zoology.

Such is to be the good fortune of those who receive a copy of the National Geographic Society's new book of mammals as a Christmas gift this year. This work is the consolidation of Edward W. Nelson's splendid nature articles in the GEOGRAPHIC.

There is no man so well fitted to introduce you to the mammals of North America as Mr. Nelson, the Chief of our remarkable U. S. Biological Survey. For forty years he has been their friend, living among them and studying their habits and traits in the most intimate way. To him an animal is something more than flesh and bone and skin and fur. It has a personality; and he is as careful to record this as to describe the formal qualities which science writes down in species descriptions.

Mr. Nelson is a naturalist of the John Burroughs order. To visit the people of woodland, mountain, and field with him is to discover a new world.

Illuminating the descriptions are natural-color illustrations from the brush of that gifted artist-naturalist, Louis Agassiz Fuertes. Mr. Fuertes is not only a master of color but also of pose, and he can catch the timid alertness of the prong-horn antelope, the cruel sagacity of the arctic wolf, the lazy indifference of the common skunk, or the wide-awake watchfulness of the gray squirrel, with equal facility.

Added to these is a series of 50 sketches by Ernest Thompson Seton, depicting the footprints of various animals as they appear in the light snow of field or forest or in the dust of the wayside. These will enable the reader to identify the tracks of many of the mammals of North America.

Together these authorities have produced a book that is without counterpart in the literature of animal life.

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Save the Colgate Handy Grip "socket" that you have—and refill it with a new stick, just as you'd refill a lighting socket with a new lamp.

Double economy with Colgate's. The Refill costs less than the complete Handy Grip. Even the stub unscrews from the old Handy Grip—is easily mounted on the Refill and adds 50 more shaves.

Mount the old stub on the new Refill

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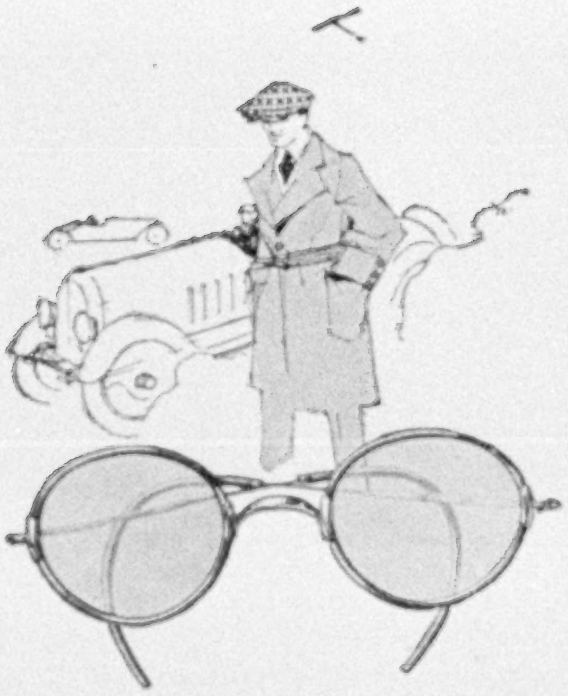

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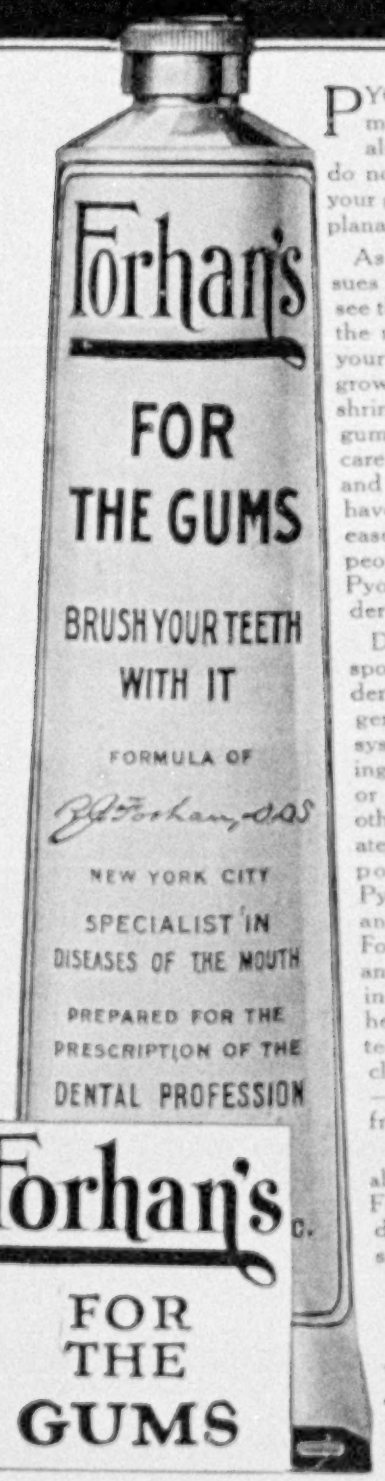
Beware of tender, inflamed gums



PYORRHEA, with a premature loss of teeth, is almost inevitable if you do not properly care for your gums. Here is the explanation:

As you age, the body tissues naturally relax. You see this tissue-loosening in the neck. It goes on in your gums, too. As you grow older your gums shrink below the normal gum line. Through lack of care they become spongy and inflamed. Then you have Pyorrhea (Riggs' Disease). Four out of five people over forty have Pyorrhea. And many under forty, also.

Don't let a tender gum spot develop. These tender spots breed disease germs which enter the system through tiny openings, infecting the joints or tonsils—or causing other ailments. Immediately get Forhan's, which positively prevents Pyorrhea if used in time and used consistently. Forhan's tones the gums and hardens them. They in turn keep the teeth healthy. Brush your teeth with Forhan's. It cleans them scientifically—keeps them white and free from tartar.

If gum-shrinkage has already set in, start using Forhan's and consult a dentist immediately for special treatment.

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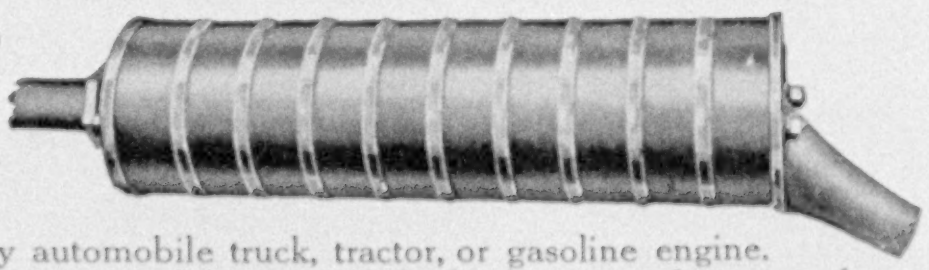

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The Grip of the Ice Fields

Great indeed is the fascination which the Far North has for certain daring, adventurous men. Donald MacMillan was at the Pole with Peary. When Peary's ship, the "Roosevelt," was on her way back, MacMillan hoped the ship would get stuck so they would be held there for at least another year. But the Pole had been found. What else was there to do?

There is a place in the North—the largest unexplored white spot on the surface of the globe—a place nobody was sure of. And this was the goal that Donald MacMillan set out to reach.

His expedition was organized by the American Geographical Society and the Museum of Natural History. They expected to be away two years; instead they spent four years of terrible hardship, of hair-raising adventure, of long, patient waiting; but they found what they set out to find, and MacMillan has told the story in a most remarkable book.

FOUR YEARS IN THE WHITE NORTH
By Donald MacMillan, M. A., F. R. G. S.
Get it today at your bookseller's.....$4.00
Read it and pass it on to a soldier.
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So many requests are being constantly received regarding lantern slides from the copyright photographs in the Geographic that arrangements have been completed to supply them to members of the Society. Slides are not kept in stock, each order being made up as received, and will be delivered within two weeks after receipt of order, unless otherwise advised.

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Why Korea came to Waltham for Time

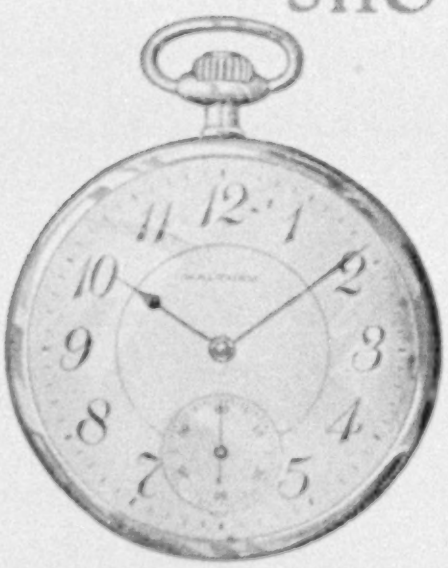
Encased in a body of gold or silver lies the real reason for the existence of any watch — its works.

The surface may be graced by delicacies of refinement so beautiful to look upon that the mind sometimes neglects to investigate the inner mechanism, which makes a watch either a reliable timepiece or simply an ornament.

But to the horological experts of a nation — when selecting an official timepiece — nothing counts but accuracy.

So Korea came to Waltham for Time. Because she found there a degree of time-keeping dependability that was unapproached even by the famous watches of Switzerland, England or France.

Why your watch selection should be a Waltham



The Riverside
The most dependable moderate price watch in the world

Because — the name "Waltham" means that inside the case has gone more than a half-century of watch making experience. Since 1854 the popular saying has been: "If you want to know the correct time, find the man with a Waltham."

Because — nothing will give you greater confidence in your watch than the knowledge that it bears the name of an institution which has contributed more improvements to the art of watch-making than any other factory in the world.

Patronize the jeweler who recommends Waltham Watches because he is an expert with intimate knowledge of those mechanical details which give time-keeping perfection. Ask him to show you the Riverside, a moderate price Waltham, made in five sizes — three for men and two for women. Here is a watch which brings to its owner a feeling of gratification that his daily work and play are timed by a masterpiece enshrining all those superiorities which have made

WALTHAM

THE WORLD'S WATCH OVER TIME

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